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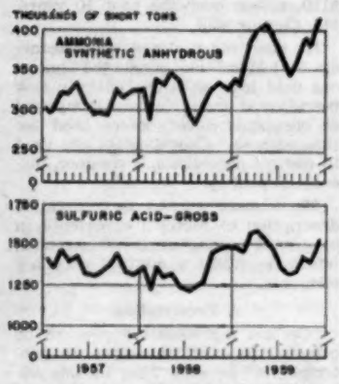
December Inorganic Chemical Output Tops November

Totals Also Higher Than Production For December, 1958

WASHINGTON — The December, 1959, production levels for industrially important inorganic chemicals in the U.S. were generally higher than those reported for the previous month and for the same month in 1958, announced the Bureau of the Census, U.S. Department of Commerce.

Increases from November were reported for 29 of the 44 chemicals included in the report. In comparison with the December, 1958 totals, 38 increases were noted.

PRODUCTION OF INORGANIC CHEMICALS



Synthetic anhydrous ammonia output was 419,733 tons for December, 1959. Comparative totals for November, 1959 and December, 1958 were 382,072 and 324,921 tons respectively.

Production of ammonium nitrate

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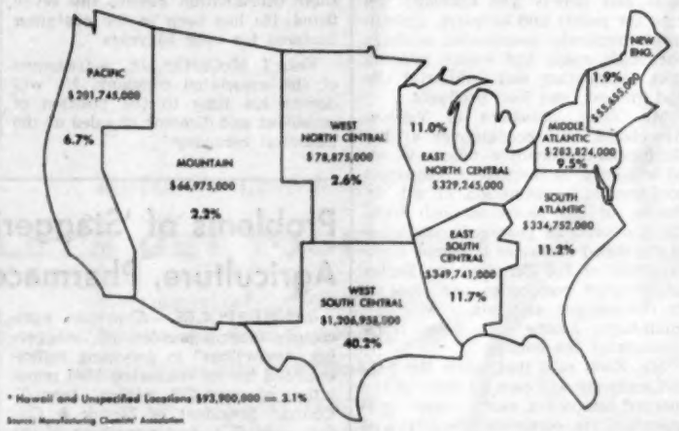
Construction of New Fertilizer Facilities to Total $75 Million

CHEMICAL PLANT CONSTRUCTION 1959-61 BY REGIONS
TOTAL FOR UNITED STATES: $3,001,670,000 = 100%



* Hawaii and Unspecified Locations $93,900,000 = 3.1%

Source: Manufacturing Chemists' Association

WASHINGTON—The 1960-61 period will be a big and significant one so far as expansion and development in the fertilizer industry is concerned, according to figures just released by the Manufacturing Chemists Assn. Facilities for fertilizer manufacturing and research slated for construction during this period will total $75.3 million, MCA says. The totals were reached through the association's annual construction survey.

Construction already begun, according to the report, totals $43.8 million and the remaining $31.5 million is for facilities scheduled for early groundbreaking and probable completion before 1962. A figure of 29 fertilizer construction projects was listed.

The significance of the MCA figures are seen in the fact that chemical production and research facilities for the fertilizer industry came to $41 million in 1959.

Progress in fertilizer manufacturing construction reflects the general surge seen throughout the chemical industry at the present time. MCA says that chemical production and research facilities to be constructed in the U.S. during 1960-61 will total $1,657,000,000. Of this figure, $1.172 billion is for construction already begun, and $485.5 million for projects scheduled for early groundbreaking and completion before 1962.

In releasing results of its annual construction survey, MCA announced that projects with a collective price

(Turn to CONSTRUCTION, page 20)

Arrival of March 6th 'Effective Date' for FDA Amendment Causes Little Stir in Trade

By JOHN CIPPERLY
Croplife Washington Correspondent

WASHINGTON — Now that the long-awaited March 6 "fully effective" date for the food additives amendment to the food and drug law has come, there is no evidence of drastic action on the use of compounds not at this point officially identified as safe and harmless, according to top officials of the Food and Drug Administration.

These officials told this reporter that they will follow a policy of reasonableness. They say that where a producer of a compound or food additive can make a showing of sincere effort to substantiate a claim either for exemption or a tolerance level for his product, FDA will grant a further extension of time for such a product.

Meanwhile, FDA officials were processing papers certifying a long list of substances as being recognized as safe or indicating tolerance levels.

The officials said that there probably will be only a relatively small number of products which are not on the latest approved list or which cannot obtain an extension of time.

Not involved in these listings are drugs which are covered by the FDA policy statement under the Delaney amendment. As reported previously, the coming of the March 6 deadline is not expected to have any immediate effect on conditions now existing for these products.

Undertones of local news are that the attacks by Secretary Flemming against industry use of certain chemical compounds are being submerged and that a White House decision to appoint a top committee of scientists to examine merits of the use of chemicals in food production will supersede the arbitrary activities of the

(Turn to DEADLINE, page 20)

Western Cotton Growers Told How Chemicals Produce Profit

BAKERSFIELD, CAL.—Cotton producers attending the Western Cotton Production Conference here March 1 were given some practical information on the economic value of optimum fertilization, insect and plant disease control, and the important way other chemical aids, such as defoliation, are essential in mechanical harvesting of the crop.

The annual meeting, held at the Hacienda Motel at Bakersfield, attracted not only cotton growers from all the Western cotton-growing areas, but representatives and spokesmen from the fertilizer and pesticide industries and specialists from the State Experiment Stations and the U.S. Department of Agriculture.

Richard B. Bahme, Western Regional Director of the National Plant Food Institute, San Francisco, said that farmers who integrate their fertilization practices with other production practices for best results are serving notice on the plant breeders to expand the yield potential of cotton.

Mr. Bahme pointed out that there is no general fertilizer program that can be recommended for all operations and that cotton producers must determine what program fits their individual problems.

"Specific fertilization programs must be developed field by field, based on interpretation of local informa-

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Wisconsin Group Developing Public Policy on Pesticides

MADISON, WIS.—Following selection of a special Wisconsin committee to survey the use of chemicals in agriculture, Governor Gaylord Nelson convened the group in Madison on Feb. 25 for a meeting with Lea S. Hitchner, executive secretary of the National Agricultural Chemicals Assn., Washington.

Objectives of the committee, composed of authorities in the fields of agriculture, chemistry, biology and public health, are to study the effects of pesticides and chemical additives on public health. The group expects to develop groundwork for a decisive and consistent public policy in respect to regulating the use of chemicals as feed supplements, food additives, pesticides, and growth regulators.

In addressing the group, Mr. Hitchner offered the "full cooperation of the pesticide industry in this urgent and important mission." He further expressed the hope that a sound committee recommendation "would overcome the serious harm recently

(Turn to WISCONSIN, page 20)

M. S. Siciliano

J. B. Harry

CRAG APPOINTMENTS—Two Crag Agricultural Chemicals appointments were announced recently by Union Carbide Chemicals Co., division of Union Carbide Corp. M. J. Siciliano is now manager—sales services, and J. B. Harry has been named sales manager. Both men have held key sales management posts in the Crag Agricultural Chemicals group, and the realignment of their responsibilities is in preparation for the coming pesticide season, the company said.

American Cyanamid Names Product Supervisor

NEW YORK—Richard G. Tousey's appointment as product supervisor for American Cyanamid Co.'s herbicide and fungicide products was announced recently by Burton F. Bowman, marketing director of the company's agricultural division.

Richard G. Tousey

Mr. Tousey will report to the pesticide products manager, R. W. Yoder, and will be responsible for all phases of the marketing of herbicides and fungicides.

Prior to his new appointment, Mr. Tousey was promotion manager for Cyanamid's phosphates and nitrogen department.

He was graduated from Cornell University in 1947 with a B.S. in agriculture with major courses in horticulture.

Before joining Cyanamid in 1951 as a field technical representative, Mr. Tousey was employed by the New York State Agricultural Extension Service.

New Canadian Liquid Firm Hosts 500 At Open House

TILBURY, ONTARIO — An open house, marking the completion of a new office, plant and storage facilities, was held here recently by Rainbow Chemicals Ltd.

According to a company spokesman, the plant is the first bulk liquid fertilizer facility in Canada. It was started four years ago and product acceptance instigated the expansion.

Some 500 farmers, government officials and representatives of various suppliers, attended the open house. Highlights of the day included a machinery display and a ribbon cutting ceremony.

Officers of the firm include A. B. Reid, president; T. R. Pogue, treasurer; F. G. Ledlow, sales manager, and R. T. Henry, manager.

Seven Container Firms Merge, Form New Company

BIRMINGHAM, ALA.—Formation of a new company, Vulcan-Associated Container Companies, Inc., and the merger of seven container manufacturers, has been announced by Gordon D. Zuck, president of the new company.

The new organization will have its headquarters and executive office at Birmingham. The companies merged into the new corporation are:

Vulcan Containers, Inc., Bellwood, Ill.; Vulcan Steel Container Co., Birmingham, Ala.; Southwestern Steel Container Co., Dallas, Texas; Vulcan Containers, Ltd., Toronto, Canada; Vulcan Containers, Ltd., Vancouver, B.C., Canada; Vulcan Containers Pacific, Inc., San Leandro, Cal., and Atlantic-Vulcan Steel Containers, Inc., Peabody, Mass.

These companies manufacture a variety of sizes and styles of steel pails and drums and specialty tin cans for paints and lacquers, agricultural chemicals, insecticides, sanitary chemicals, soaps and waxes, printing inks, lubricating and industrial oils and greases, and food products.

Mr. Zuck, president of Vulcan-Associated, will headquarter at the Birmingham executive offices where he will head-up the parent company's program of coordination of all activities of the seven merged firms. He has over 28 years of experience in the metal container business. He is president of the Birmingham, Dallas and Boston companies participating in the merger and has a wide acquaintance among the paint trade throughout the country.

Mr. Zuck said that while the parent company will own all stock of the merged companies, each company will maintain its corporate identity and will operate individually in each area. The seven companies will each function under the direction of its board of directors and staff of officers. At the same time, the combined strength and versatility of the group will be used to increase efficiencies, quality and sales-service coverage to users.

"We don't want this to be just another big company," Mr. Zuck said. "We intend to offer a special type of personalized service to steel container users across the country that is not present with most big concerns. We will retain the friendly individuality, and personality of each unit. This consolidation is the first step in a planned program of expansion. The Bellwood plant has just completed a large building addition and installation of new equipment. Birmingham has added 20% more manufacturing area and new production equipment. Dallas has doubled its manufacturing space and is presently adding new large drum equipment. Toronto has just completed a large new 10,000 sq. ft. plant addition. Boston plans to move into a new building in about 30 days. Other improvement plans are ready to put in work. Three new locations have been selected for the establishment of new plants in the near future."

Vern I. McCarthy, Sr., will serve as chairman of the board of directors of the new corporation. He will headquarter at Bellwood and will devote his efforts to overall development programs of the companies, including research and foreign operations. He became president of the company in 1942. In December, 1959, he became board chairman and turned the presidency of the Bellwood Co. over to his son, Vern McCarthy, Jr., who is now the third generation to head-up that organization.

Fred A. Kusta, vice president of Vulcan Steel Container Co. in Birmingham and vice president of Southwestern Steel Container Co. in Dallas will serve as executive vice president of the new parent company. He has been in the container manufacturing business since 1947. He will handle the synchronizing of procedures, plant and mechanical improvements, and will supervise the exchange of ideas, methods and talents, and expansion programs. Mr. Kusta will headquarter at the main office in Birmingham.

Paul H. Oberholtzer is the secretary of the new firm and will have charge of accounting procedures and their coordination among the seven firms. He has been in the container business for over 10 years.

Vern I. McCarthy, Jr., is treasurer of the associated company. He will devote his time to the position of president and director of sales of the Bellwood company.

MAKING RANGE FERTILIZATION PAY

SACRAMENTO — Five conditions are necessary for profitable range fertilization in California, according to Dr. Merton Love, chairman of the University of California department of agronomy.

Speaking to agricultural leaders in a recent meeting at Berkeley, Dr. Love said the following five factors are essential:

1. Initial soil fertility must be low.

2. The climate must permit increased growth where it is needed.

3. Proper plant species to respond to higher fertility must be present.

4. Certain changes in management usually are needed.

5. Fertilizer must be more economical than other means of increased production such as supplemental feeding.

RESEARCH DIRECTOR RETIRES

NEW HAVEN, CONN.—Dr. Floyd L. Winter, director of the breeding and research department of Asgrow Seed Co., has retired after 26 years, announced A. Bryan Clark, president. He will be succeeded by Dr. Allen R. Trotter, who formerly directed the company's vegetable breeding program in Florida, Texas and California.

Problems of 'Staggering Proportions' Face Agriculture, Pharmaceutical Head Declares

MINNEAPOLIS — American agriculture faces a problem of "staggering proportions" in providing sufficient food for an estimated 1984 population of over 275 million, John T. Connor, president of Merck & Co., Inc., said at a dinner meeting of the Northwest Feed Manufacturers Assn. here Feb. 29 at the Calhoun Beach Hotel.

"By 1984 we can expect to have at least 50% more people in the country than we now have, or a total of over 275 million," Mr. Connor declared. "This will mean roughly that then we will need 50% more of all foods than we now raise. Here is a problem of staggering proportions."

He indicated that intensified studies of agricultural management techniques would be helpful in meeting this problem.

Effective Management

"It seems to me imperative," he said, "for every company concerned with agriculture to make its management as effective as possible if it is to meet successfully the challenges and problems that will inevitably be posed in the future, and adapt successfully to the shifting conditions that will be encountered."

Mr. Connor pointed to the improvements in agriculture which have already been made by industry. "Over the past three decades Merck and your companies have had much in common. Our mutual goal is good health and, together, we have managed to work enormous changes in the health or our nation's people and of its livestock."

He said that Merck had developed "at least 20 new products in the field of animal nutrition and health," including the B vitamins, antibiotics like penicillin and streptomycin, and coccidiostat products.

"The overwhelming majority of our products have been the result of Merck's own research efforts, developed and perfected in our laboratories," he continued. "We are firmly committed as a company to the concept that our future lies in developing and marketing products which we discover and not by licensing and marketing the research accomplishments of others."

Merck's research budget was more [illegible] million in 1959 and totaled $119 million over the past 10 years, Mr. Connor said.

He also told the feed manufacturers that Merck had conducted numerous field tests with an "entirely new coccidiostat made from a compound of chemicals never before used for this purpose." Coccidiostats are used to control coccidiosis, a common disease of poultry.

Mr. Connor turned to a detailed description of Merck's experience in improving management effectiveness, which he called a mixture of many elements.

A Prescription

"Certain ingredients appear to be common to most management prescriptions," he said. They include adequate financing to accommodate expansion, employees with management potential, "products of value," and intangibles like imagination and optimism.

Mr. Connor emphasized that the development of objectives as a guide and statement of responsibility for each area of the company were the key to effective management.

A list of specific goals which the corporation, each division and each department seeks to reach is clearly spelled out and individuals also make up personal objectives.

"From research to product development and mass production to marketing," Mr. Connor declared, "we are dependent upon individual effort and individual ability to a degree beyond that of many other businesses."

At the beginning of every year members of the company write down the goals they plan to reach in carrying out their assignments. At the end of the year, their performances can be measured in terms of results compared with their objectives, and incentive awards distributed accordingly.

"The activating ingredient in the entire mix," Mr. Connor concluded, "is concern for the individual, concern not only for his rights and dignity but concern for the atmosphere and the circumstances under which he works so that maximum creativity and effectiveness can be realized for his own satisfaction and for the good of the entire enterprise."

KEEP YOUR EYE UPON THE BORER AND NOT UPON THE HOLE

ST. PAUL, MINN.—Those tunnels that corn borers make in corn stalks may not be the major source of trouble after all.

The real damage may be from a chemical change that borers cause when feeding on young leaves, University of Minnesota entomologists have found. They have evidence that borers either deposit a toxic substance in the leaves or pave the way for microorganisms that have a harmful effect.

H. C. Chiang and F. G. Holdaway came to that conclusion after discovering that growth stunting in the corn plant begins when the young borers are feeding on the leaves—before they get into the stalk to make tunnels.

The finding gives further support to a key principle in corn breeding: developing new hybrids which resist leaf feeding. Scientists have known for some time that corn with such resistance is less apt to suffer yield loss from borers. The finding made by Mr. Chiang and Mr. Holdaway helps explain why.

John B. Gagnon Walter H. Bush

10 YEAR AWARDS—John B. Gagnon, Worthington, Minn., and Walter H. Bush, Rochester, Minn., were presented 10-year service awards by Mack A. Glass, Smith-Douglass manager in Albert Lea, Minn. Smith-Douglass is rounding out its first 10 years in Minnesota. These awards were the first to be made to sales representatives in that state.

Connecticut Fruit Growers Discuss Pest Controls at Meeting

NEW HAVEN, CONN.—Connecticut fruit growers, at their mid-winter meeting at the Connecticut Agricultural Experiment Station, studied ways to produce clean, attractive crops in the light of up-to-date information on pest control, marketing, and promotion. The morning session was arranged by George S. Geer of the extension service in New Haven County and by the station.

Research findings and directions for application of fungicides and insecticides were presented by Neely Turner, head of the station department of entomology.

Arthur C. Bobb, University of Connecticut extension pomologist, gave the detailed 1960 recommendations for control of pests of apples, peaches and pears. The recommendations are prepared each year by Mr. Bobb in cooperation with Dr. Philip Garman and Dr. Patrick M. Miller of the station.

Dr. Miller reported results of his experiments on apple scab control in 1959, and on the planting-time treatment of apple trees with materials known to control nematodes.

The afternoon session consisted of a meeting of the Connecticut Pomological Society. The complex matter of meeting consumer demand for clean fruit, free from damage and decay, while making sure that no undesirable or unsafe pesticide residues remain, was discussed by three speakers: Mr. Turner of the station staff, Dominic Zaccardi, resident inspector in Hartford of the Food and Drug Administration, and J. A. Noone, technical adviser, National Agricultural Chemical Assn., Washington. They were assisted in answering growers' questions by a panel: Frank Rogers, Southington grower; Terry Marvin of Hubbard-Hall Chemical Co., Waterbury; Dr. David Marsden of Eastern States Farmers Exchange, Inc., West Springfield, Mass.; Robert Josephy, Bethel grower; J. Peter Johnson of the station staff in entomology, and Mr. Bobb.

Apparent consensus was that the demand for fruit free from damage and decay calls for use of agricultural chemicals, and that these pesticides may be safely used on the crops specified, in the amounts specified, and at the time specified on the product label. The executive committee of the Pomological Society was instructed to summarize growers' views of the pesticide residue problem and present this information to legislators.

About 200 attended the meeting. B. W. Funk of South Glastonbury presided and James G. Horsfall, station director, welcomed the growers.

BARGE TRAFFIC HEAVY

BAINBRIDGE, GA.—Chemicals used in fertilizers and for insect control have formed a goodly part of the barge shipments crowding in at the new dock on the Flint River at Bainbridge.

This dock, which was constructed after freight transportation on the river became possible through construction of the big Woodruff dam, is a factor in cheaper shipments of chemicals into Georgia.

On a recent week-end five barges containing 5,760 tons of sulphur, and one barge loaded with 1,000 tons of benzene hexachloride were among the huge shipments into the port. This was the first shipment of the insecticide, benzene hexachloride, into the port. It was sent by Columbia-Southern Chemical Corp. of Pittsburgh over several thousand miles of inland and intra-coastal waterways routes to reach its destination for delivery to formulators in a tri-state area.

The insecticide shipment came over the Ohio and Mississippi rivers and intra-coastal waterways. The shipment was part of the company's waterways shipping program designed to make benzene hexachloride readily available at the Bainbridge port of authority for immediate processing by formulators when heavy insect infestation occurs in the cotton fields.

Fertilizer Dispersing Plant Built in Oregon

SALEM, OREGON—A new bulk fertilizer dispersing plant has been constructed in the Shaw area, east of here. The first carload checked out Feb. 25, a company spokesman reports.

The plant will store six carloads of fertilizer taken off railroad cars. Two large hoppers will funnel the fertilizer into boxes which can be loaded easily onto farmers' flatbed trucks.

The Albert Dickinson Co. leased the site for the plant from the Southern Pacific railroad. It is the site of the old Shaw railway station, torn down some years ago.

FLORIDA MONTHLY SALES

TALLAHASSEE, FLA.—Fertilizer sales in Florida during January, 1960, amounted to 189,290 tons, reported Nathan Mayo, commissioner, Florida Department of Agriculture.

Western fertilizer dealers...

LET'S GET TOGETHER!

Your market is full of opportunities for men with ideas . . . who can act fast! If you have been thinking how you could improve your fertilizer sales picture by expansion, diversification, better equipment, or by solving inventory or finance problems, we can probably help you do it.

PICK UP YOUR PHONE RIGHT NOW!

Call one of these Brea Brand sales representatives. Give him a chance to pitch in with you and come up with a good, practical marketing approach. You'll find him eager to help... capable and experienced... backed by an organization that can make fast decisions.

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MANUFACTURER OF
BREA BRAND FERTILIZERS | SOLUTIONS AND DRYS

North Central Entomology Meeting Plans Announced

MADISON, WIS. — The annual meeting of the North Central Branch of the Entomological Society of America will be held at the Hotel Schroeder in Milwaukee on March 23-25.

The entire morning of March 24 will be devoted to topics on the effects of pesticides on wildlife. T. G. Scott, wildlife specialist, and W. H. Luckmann, entomologist, both of Illinois, will discuss the effect of dieldrin on wildlife and insects in general where this insecticide was used in an area control program against the Japanese beetle.

On the same program, a panel composed of George C. Decker, principal entomologist, Illinois State Natural History Survey; W. H. Dykstra, research staff assistant, Fish and Wildlife, U.S. Department of the Interior, and C. H. Hoffman, assistant director, Entomology Research Division, U.S. Department of Agriculture, will discuss pesticide-wildlife relationships on a national basis.

In the afternoon, on March 24, a panel will discuss "The Problems and Responsibilities Involved in Chemical Residues." Members of the panel include:

J. L. Harvey, deputy commissioner, Food and Drug Administration; W. L. Popham, deputy administrator, ARS-USDA; N. J. Volk, director, Purdue Agricultural Experiment Station; C. B. Ratchford, director, Missouri Agricultural Extension Service; Charles Schuman, president, American Farm Bureau Federation, and M. R. Zavron, assistant professor of industrial medicine, Kettering Laboratory, University of Cincinnati.

Hercules Distributes College Grants-in-Aid

WILMINGTON, DEL.—Over $110,000 in unrestricted grants-in-aid is being distributed by Hercules Powder Co. among thirty colleges and universities, it was announced recently. The unrestricted grants-in-aid program gives complete freedom in the use of these funds to the heads of departments of chemistry, chemical engineering, physics, mechanical engineering, and others in the participating schools.

In announcing the list of recipients of the grants-in-aid, Albert E. Forster, president and board chairman of Hercules, said: "Our educational system is tightly woven into the fabric of this nation's industrial economy and its national defense. Only by providing educators the opportunity to guide our young people in developing their skills and talents to the fullest extent can we maintain our high standards of living and our freedom."

Valley Nitrogen Dedicates New Plant

HELM, CAL. — More than 1,000 visitors took part in the formal dedication of the $10 million Valley Nitrogen Producers, Inc., fertilizer plant here.

Following the dedication program, the visitors were taken on a tour of the facilities. The plant has a daily output of 150 tons of anhydrous ammonia fertilizer, and 200 tons each of ammonium sulphate and ammonium phosphate.

The new plant, located on a 125 acre site about 1½ miles from Helm, includes facilities for anhydrous ammonia, sulphuric acid, sulfate of ammonia, ammonium phosphate and phosphoric acid. First shipments of anhydrous and aqua ammonia synthetic nitrogen were made in August of last year, and production of other materials followed.

Universal Appoints Sales Representative

SARANAC, MICH.—Oliver (Ollie) Dean has been appointed field sales representative in the Northern Illinois - Southeastern Wisconsin area for Universal Metal Products Co., Division of Air Control Products, Inc., Saranac.

Oliver Dean

Mr. Dean is well - acquainted with the sprayer industry and will represent Universal's line of sprayers, dusters and allied products in this area. His entire business life has been devoted to sales work and sales training.

He is a native of Grand Rapids, Mich., but expects to move to the Chicago area soon.

Bemis Names Manager Of New Bag Plant

ST. LOUIS—L. A. Linville, vice president and director of Western operations, Bemis Bro. Bag Co., has announced the appointment of George E. Nelson as production manager of the firm's San Francisco bag manufacturing plant.

In making the announcement at his San Mateo offices, Mr. Linville stated that Mr. Nelson will be placed in charge of all manufacturing, production and office management activities at the San Francisco plant which will move, early this summer, to new facilities in Newark, Cal. He succeeds Frank W. Peters who has been named facilities engineer.

Mr. Nelson, who has served as production engineer at the company's Seattle bag plant during the past year, joined Bemis in 1948 as a quality control supervisor there. In 1951, he became an assistant superintendent and in 1957, plant engineer.

A graduate of Stanford University where he earned a B.S. degree in industrial engineering in 1948, Mr. Nelson also attended the advanced management seminar at the University of Washington in 1959.

NEW CREDIT MANAGER

ST. LOUIS — Richard C. Hellwig has been appointed credit manager for Monsanto Chemical Co.'s overseas division effective Feb. 15, announced Walter J. Naber, Jr., general credit manager. A native of East St. Louis, Ill., Mr. Hellwig received an AS degree in commerce and finance from St. Louis University in 1952. He joined Monsanto's credit department in 1953 and since has handled several special assignments within the treasury department. Since early 1959, he has served as an assistant in the credit department of the company's inorganic chemicals division.

"Red" Emm shows you...

HOW MONSANTO WEED KILLERS BUILD STORE TRAFFIC ...HELP YOU SELL!

New "Red" Emm SUPER-6 CONCENTRATES! Brush Blitz, Crop-Guard Weed Killer, Brush-O-Cide, and Field Clean Weed Killer... a new line of 6-lb. formulations that give your customers more "kill" at a lower cost...two cans do the work of three! These SUPER-6's spray 50% more acreage than ordinary 4-lb. formulations.

Residex Names Products Manager

CLARK, N.J.—Residex Corp., formulator and distributor of insecticides and weed control materials, announced the appointment of Anthony Giorgi to the position of products manager.

Anthony Giorgi

Mr. Giorgi, formerly a sales representative for a national agricultural company, is a graduate of Rhode Island University, and received his master's degree in entomology from Rutgers University.

Dr. John V. Lembach, general manager and vice president, announced that Mr. Giorgi has been selected for this newly created position to augment the recent Residex expansion and growth program.

Mr. Giorgi will assume his duties in the Residex general offices and warehouse, the construction of which has just been completed in Clark.

Oregon Firm Changes Hands

SALEM, OREGON—Floyd Claypool, formerly feed mill superintendent and head of feed products control for Centennial Mills, Portland, announces he has purchased the Gro-Mor Fertilizer Co., together with William G. Spady, Oregon City.

The firm was formerly known as the Oregon Soil Clinic and the Salem Bag Co. E. H. Bixby was the seller.

The new owners plan to specialize in commercial fertilizers, soil sampling and soil balancing, and will provide custom mixing for farmers. In addition, plans call for the marketing of a specialty lawn and garden fertilizer along with a full line of agricultural chemicals.

Witco Income Up

NEW YORK—Net operating income for 1959 of $2,028,200 was reported by Witco Chemical Co., Inc. and subsidiary companies consolidated in a preliminary report issued by Max A. Minnig, president. These results, subject to final audit, compare with $1,638,300 in 1958, an increase of 24%. Per share net operating income on the basis of the average number of shares outstanding during each period amounted to $2.66 per share in 1959 as compared with $2.44 in 1958.

In 1958, 41¢ per share was realized from a special non-recurring item of $272,900 so that net income from all sources in 1958 totaled $1,911,200, or $2.85 per share on an average of 670,173 shares outstanding during that year.

Net sales and other income in 1959 came to a new high of $51,567,400, an increase of 29% over the $39,942,700 reported for 1958.

Dr. David B. Hatcher Wilfred J. Crepeau

Two Promotions Announced By Stepan Chemical Co.

CHICAGO—Alfred C. Stepan, Jr., president of the Stepan Chemical Co., has announced the following executive promotions for the company: Dr. David B. Hatcher, formerly vice president and general manager, becomes executive vice president and will coordinate operations of all divisions and subsidiaries of the company.

Wilfred J. Crepeau, formerly assistant general manager, becomes assistant to the executive vice president. Mr. Stepan said that the promotions were a part of a corporate realignment of executive responsibilities in connection with Stepan's recent acquisition of Maywood Chemical Co. and Ris-Van, Inc., which are being operated as divisions.

Firm's By-Product Used For Land Liming Material

NEW YORK—Union Carbide Metals Co., division of Union Carbide Corp., has embarked on a program designed to make use of the co-products of its metallurgical operations.

UCM uses large electric furnaces to produce ferroalloys and metals for use in making steel, cast iron, and nonferrous metals such as aluminum, bronze and copper. From these operations a co-product containing a high percentage of dicalcium silicate is produced. The company became interested in the U.S. Department of Agriculture's program for land liming to neutralize acid soils. UCM submitted their material to agricultural agencies who tested it and found that it contained 15% greater calcium equivalent than crushed limestone.

The material is produced at two UCM plants—Alloy, W.Va., and Niagara Falls, N.Y.—and is sold to registered land liming companies.

In addition to the dicalcium silicate-containing material the company is investigating several of its oxide aggregates for trace elements and other industrial uses.

NEW DISTRIBUTOR

CEDAR RAPIDS, IOWA—Spreader Body & Equipment Co., Assumption, Ill., is a new distributor for Highway Equipment Co., Cedar Rapids. They will handle "New Leader" lime spreaders, combination lime and fertilizer spreaders, widespread lime and fertilizer spreaders and mobile blenders. Spreader Body & Equipment Co. serves a 22-county area in south central Illinois. Address of the new distributor is 110 N. Walnut St., Assumption, Ill.

BLUE MOLD FOUND

WAYCROSS, GA.—Blue mold has been discovered in tobacco beds of Ware County, and Tom Boland, county agent, is urging all the tobacco growers to check their beds for damage.

Mr. Boland pointed out that every year this dreaded fungus takes a heavy toll of plants and causes losses through delays in transplanting. He said regular and thorough spraying or dusting of plant beds is the cheapest and safest way to control the blue mold.

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Pesticidal Application From Air Continues Growth, Speaker Says

By Ron Logan
Croplife Special Writer

COLLEGE STATION, TEXAS—"Agricultural chemicals applied from the air can be an efficient and economical operation if established, recommended procedures are followed," J. H. Davidson of The Dow Chemical Co. told listeners at Texas A&M College recently.

He was speaking at the ninth annual Texas Agricultural Aviation Conference and Short Course on Pest Control, attended by almost 400 applicators and allied industry representatives.

"The area treated from the air during the past seven years has doubled and this growth will continue as the aerial application industry matures and improved chemicals and formulations are developed," he said.

In 1958, he continued, 4,000 pilots dropped 700,000,000 pounds of dry material and sprayed nearly 100,000,000 gallons of liquid on 60,000,000 acres. Total flying time was 850,000 hours to give an average application rate of 70 acres per flying hour. Much of this was for insect control but the area treated with herbicides is rapidly increasing.

"Almost all types of agricultural chemicals can be applied by air," he said. "Good results are generally dependent on: (1) using suitable formulations, (2) careful application by the pilot, and (3) employing good equipment.

"The chemical industry can best serve those who apply agricultural chemicals from the air, if the applicators perform their job well. Good performance assures repeated business which in turn will justify investment by the chemical manufacturer in research and development of products suitable for aerial application.

"One of the most important items in good performance is using suitable formulations. Dusts are generally easier to formulate and safer to apply by air than are sprays, but they present a greater hazard. This hazard may be twofold. If the treatment is an herbicide, it is essential that the material fall only on the area to be treated, to prevent possible damage to desirable crops or vegetation.

"If the treatment is an insecticide, care must be exercised to see that none of the material falls on a food crop that might find its way into human use directly or through dairy cattle feeding on it. Aerial dust applications of 2,4-D in many areas have been curtailed because of the drift. Similar restrictions on insecticide dusts may arise if their drift contaminates food crops.

"One possible method of correcting the drift problem from dusts is to use granular formulations. These are being made available for 2,4-D herbicides and certain insecticides. Spray application is another answer to the drift problem if sprays consisting of large droplets can be used.

"The aerial application of sprays has much in its favor when hazards from drift are concerned. For sprays to be easily handled the toxicant should be in solution or in an emulsifiable form. Suspensions of wettable powders frequently cause nozzle plugging and, in some cases, it is difficult to keep a uniform suspension in the spray tank. In aerial applications it is necessary to use much more concentrated sprays than with ground equipment. When concentrated solutions or emulsions are used, spray injury to fruit and foliage may occur. With herbicide applications this may not be much of a problem but on fruit and vegetable crops it can be of considerable importance.

"Dense dust carriers of insecticides or granules have been tried in an attempt to attain better drift control. In most cases, the particles are so heavy they do not adhere to plant foliage and poor results are obtained. For brush and aquatic weed control, granules may prove very satisfactory.

"One can, therefore, see the necessity of suitable formulations if the aerial applicator is going to remain in business. An ideal formulation would be a spray that would come out in moderate-sized droplets with no fine spray drift. These droplets would be nonvolatile and dense enough to drop straight down, so if necessary a plane could fly fairly high to miss trees and other obstructions yet the spray would cover the prescribed area without drift.

"In the case of insecticides and fungicides, such liquid formulations would need to be safe to fruit and foliage in addition to the above nondrift characteristics. It will not be easy to develop formulations to fulfill the above requirements, but chemical manufacturers and formulators have at their disposal many new products which may prove suitable. The limiting factor is whether the market potential justifies the expense required to develop such formulations. One approach to this problem in the herbicide field has been the development of invert emulsions. This has presented some application equipment difficulties but these problems will be solved . . ."

On the subject of foliar fertilization, A. G. Caldwell, associate professor in Texas A&M's department of agronomy, told the group, "The usefulness of foliar fertilization will depend on a number of considerations. (1) The plant must be able to absorb the material. (2) The plant must be able to absorb the nutrients in amounts sufficient to supply its needs without harming the plant. (3) In order for the practice to be accepted, it must be effective and economical in comparison to soil application.

"In general, the nutrients required in the smallest amounts—the trace elements—lend themselves to foliar application. If these are absorbed and transplanted by the plants they will generally be effective. Usually they are required in such small quantities that the cost of the material is not a major problem. In some instances soil applications are less effective. In these cases foliar applications become more attractive. The major nutrients—nitrogen, phosphorus and potassium—are required in much larger quantities. It then becomes a problem to apply enough to supply the needs without hurting the crop."

On the subject of Basic Research in Insect Control, J. R. Brazzel of the college's department of entomology, said ". . . Since applied research is dependent upon basic research, there must be a proper balance between the two . . .

"The ability of insects to develop resistance to some organic insecticides has introduced another factor for consideration. Many authorities feel that the phenomenon of resistance threatens to wipe out our recent gain in chemical control of insects . . . the fact that chemicals constitute the only reliable control measures presently available for the boll weevil and several other pests, indicates that research along these lines is necessary . . ."

Dr. Wayne C. Hall, head of the college's department of plant physiology and pathology, speaking on "Chemical Residues and Harvest-Aid Chemicals on Cotton," said, "Owing to the amendment of the Pure Food and Drug Act in 1959 bringing defoliants and desiccants under the provisions of the Miller Amendment, considerable concern and confusion exist as to the future of harvest-aid chemicals on cotton. This concern was accentuated by the widespread publicity attending the ruling of the FDA in late 1959 relating to the possible contamination of cranberries by aminotriazole, a chemical also used as a cotton defoliant and regrowth inhibitor . . .

"There is no doubt that chemical defoliants and desiccants are a necessary part of modern cotton production. It is estimated that about 40% of the beltwide cotton acreage was treated with harvest-aid chemicals in 1958. During the last harvest season in Texas this figure approached 50% or around 3,000,000 acres treated.

"From 1958 to 1959 spindle pickers showed about an 80% increase in the state and strippers about a 10% increase. The benefits to the grower in savings in the cost of harvesting by combining pre-harvest chemical treatment with mechanical harvesting over hand harvesting are well established. These points refute the claim of some that we should abolish the use of all chemicals on cotton . . .

"At the same time we in cotton have the responsibility of insuring maximum safety to the consuming public. Texas in 1957 produced about 1,800,000 tons of cottonseed, the majority of which went into the oil and oil meal channels. The 1957 per capita consumption of margarine was 8.6 lb.; vegetable shortening 10.4 lb., and other cottonseed oil products, 10 lb. About 300,000 tons of the 1957 crop of cottonseed was harvested from fields that were defoliated or desiccated. Since 1957 the per capita consumption of cottonseed products and the usage of harvest-aid chemicals on cotton has increased yearly."

Speaking on pesticide residues in Human and Animal Foods, R. E. Duggan, chief chemist for the New Orleans district of the FDA, started off with a quote:

"'A Bargain in Literature—The most expensive literature on the market today are the words on the labels of pesticide containers. The few short paragraphs on the label sum up the results of research and development costing upwards of a million and a half dollars.' On one package were about 750 words. This is a relative cost of $2,000 per word. If the user carefully reads the label and follows the instructions implicitly, a food crop will be perfectly safe for the consumer to use."

Changes in rules and regulations under which aerial applicators ply their trade were outlined by an official of the Federal Aviation Agency during the conference. Speaking to nearly 400 conference participants, James T. Pyle, deputy administrator of the FAA, told the group the major change in the aviation picture in government was the inauguration of the Federal Aviation Act of 1958.

"While Congress was investigating the legislation creating the Federal Aviation Agency, the aerial application business came under some rather close scrutiny," he recalled.

"The Congress saw fit to write into the new Federal Aviation Act of 1958 some language that differed quite significantly from the old Civil Aeronautics Act of 1938 . . . the Administrator of the FAA is authorized and directed to prescribe air traffic rules and regulations governing the flight of aircraft for the protection of persons and property on the ground."

Mr. Pyle said that in the absence of federal regulations, various states make regulations of their own. This could result in a "crazy quilt" pattern of regulations, he said, which might stifle the aerial application industry which moves freely from state to state.

He said that the incorporation in an air agency certificate of two major controls would "accomplish our common purpose of protection of persons and property on the ground, and at the same time, protect the operator."

The two major areas mentioned by Mr. Pyle are: 1. Increased pilot competence and 2. Clear-cut lines of responsibility for the conduct of the operation.

Rodent War Planned In Ohio Counties

COLUMBUS, OHIO — State and federal authorities said an intensified program will start this spring to rid Marion, Wyandot and Licking County farms of destructive rodents and pests.

Ohio's division of plant industry and the U.S. Department of the Interior announced the plan in a summary report to the Ohio Agriculture Department.

The two agencies have cooperated in the program since last July when the Ohio Legislature authorized a program to cut farm destruction by rats, mice, and crop-nibbling birds.

"In Fairfield County alone rats and mice destroyed about $750,000 worth of crops last year," said John Beck, an agent of USDI's branch of predator and rodent control.

AGRICULTURAL FORUM — More than 700 persons attended the recent second Agricultural Industries Forum at the University of Illinois. Here are some of the principals, left to right: M. S. Williams, chief agricultural economist, the National Plant Food Institute, Washington, D.C.; W. N. Thompson, University of Illinois, professor of farm management; Harold Goodwin, president, Illinois Crop Improvement Assn., Bloomington; W. O. Scott, associate professor, crops extension, and G. H. Valentine, Jr., Bristol Grain & Seed Co., Bristol, Ill.

'Ridiculous' U. S. Farm Program is Lambasted by Board of Trade Head

CHICAGO — Robert C. Liebenow, president of the Chicago Board of Trade, recently spoke on two successive days in Portland, Ore., continuing his hard-hitting crusade against those whom he considers the enemies of free enterprise and other disciples of the socialistic cult, who believe "the government can do it better."

Mr. Liebenow's first address, "A Healthy Farm Economy—the Goal of All Industries," was presented before the dinner meeting of the Northwest Hardware and Implement Assn. Appropriately it was delivered on the birthday of George Washington, a dirt farmer in his own right —and most certainly a militant opponent of big government and its attendant domination over activities of the individual in his effort to earn an honest living. The second address was presented as a luncheon speech before the Portland Kiwanis Club. Mr. Liebenow spoke on "The Farm Problem—A Year of Reckoning."

In his appearance before the hardware and implement men, Mr. Liebenow, mentioning that this is an election year, paid his respects to the "ridiculous" farm program with which the country has been saddled and the resultant back-breaking surpluses of wheat, corn and cotton (to name just a few commodities). In discussing ways and means of disposing of these surpluses, he suggested they might be used to build a sky-high monument to the "incredible stupidity" growing from efforts to buy the farm vote with tax dollars.

Grain Business Hurt

Mr. Liebenow readily admitted that his oppostion to the unworkable national farm program is partially selfish because it has hurt the grain business in just the same manner as it has hurt all other types of business. He referred to one possible exception—the people who supply paper for all the "paper work" and colored tape for the miles and miles of red tape necessary to administration and enforcement of the farm program.

At this point, Mr. Liebenow emphasized the fact that his antagonism goes even much deeper.

He is opposed to the program, Mr. Liebenow stated, "because it is morally wrong," adding that "our government was never designed to guarantee economic aid or security to any one group of individuals. We are committed to the system of free enterprise, which is something that should be remembered on election day."

"We have managed to price ourselves out of the world market for many agricultural commodities," said Mr. Liebenow, "while accumulating astronomical surpluses of farm commodities in the federal stockpile (an ever normal granary if there ever was one, with apologies to Henry Wallace II)."

"By continued support of basic farm products at unrealistically high levels, we have long since created an 'umbrella,' under which shelter from competition, other countries have been able to nurture and develop their own competitive agricultural industries. Our assurance of such high prices to the American farmer has definitely promoted a boom in both cotton and tobacco farming in portions of Africa," asserted Mr. Liebenow.

Touching on the matter of grain storage facilities and the rather recent "concern" expressed in some Congressional quarters over the high cost of storing mountains of government grain "bought" by loaning more to growers than the commodity was worth, Mr. Liebenow used a quotation from Ezra Taft Benson, secretary of agriculture, made as a gesture of sympathy to those "just awakening" to the fact that this is a costly, indefensible — and necessarily wasteful—matter:

> ". . . this is what results from continuance of an outmoded and unrealistic program—and I am sure it would have been far more costly and wasteful had the federal government attempted to handle this vast storage problem . . ."

As he has done in recent talks, Mr. Liebenow mentioned the theory with respect to bureaucracy tending to reproduce itself which in effect represents a "sprouting of organization for organization's sake." Elaborating on this point, the board of trade official said that it was crystal clear "the bigger the farm program and the greater the participation in it, the more expensive becomes storage of the defaulted collateral, and automatically, administration of the law."

Election Year

"Since 1960 is an election year," Mr. Liebenow said, "this is an appropriate time to demonstrate our public dissatisfaction and displeasure with the political opportunism of Congressmen, and to try and vote some logic back into our government. Possibly both political parties plan to soft-pedal the farm problem. They should not be permitted to do so.

"I have some criteria which I believe could be used as a set of standards to judge the real value of the various farm programs or schemes that might be proposed, and I would like you to consider these points:

- Does it encourage gradual adjustment to basic economic conditions, such as supply, market demand, consumer preferences, technological trends, changing tastes, population trends?
- Does it protect the basic and minimum capital needed to supply the nation's domestic and export requirements?
- Does it treat all producers equitably as to commodities produced or size of operation, and does it permit the farmer reasonable freedom in planning and management of his farm business?
- Does it promote stable management, conservation of natural resources, foster the research, development and dissemination of effective

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and efficient production and marketing methods?

● Does it base farm income on being earned by producing for market to satisfy wants and needs?

● Does it stabilize the farm economy by helping to even out short-term erratic fluctuations in prices, production and consumption, arising from uncontrollable sources? Or, does it, under the name of "stabilization," drive agriculture further out of balance between production and supply on one hand and demand and use on the other?

● Does it entail heavy public expense? If so, what is the benefit to the public interest bought by the outlays?

● Does it foster and encourage adjustment of farm people toward their most economically productive and rewarding employment?

● Is it based on realistic economic and technological conditions? Or, is it tied to some 'historical' base, or some arbitrary relationship between segments of the economy of the national society?"

Grecian Parable

In closing, Mr. Liebenow made mention of an ancient Grecian parable propounded when Greece was suffering from considerable economic distress:

All of the economists in the king's realm were given the task of writing some simple, practical laws to guide the country's economy. At the end of one year, they gave the ruler a solid 100 volumes, cataloged as "A Guide to Economics."

Completely disgusted, the king ordered half of the group of economists to be put to death and gave the other half another year to do the job. This was done year after year, until only one economist remained.

"With nine short words," said the board president, "this lone survivor came up with the basic law of economics, one that has and always will stand the test of time. It reads: 'There is no such thing as a free meal.'"

Appearing as speaker at the luncheon meeting of the Portland Kiwanis Club the following day, Mr. Liebenow took "The Farm Problem—A Year of Reckoning" for discussion; taking up where he left off before the hardware and implement dinner.

"The farm program," he said, "is receiving a kind of nefarious subversive support from the hierarchy of bureaucrats hired to administer the program and who paint dire pictures of what they say 'might occur' if the program was abolished. Although the farm-bloc is in reality a very small segment of the national population, the tools of these men—these bureaucrats both in the U.S. Department of Agriculture and in other areas of the federal government—are uncontrolled spending and uncontrolled taxation. As a result, we the public, find ourselves being bribed into the antithesis of freedom and what's worse, with our own money."

As he did the day previous, the board of trade president again brought the name of the well-known British educator, Professor Parkinson, into the discussion when he mentioned the latter's theory suggesting that the only sound way to determine the national tax ability is to base it on the gross national income.

Mr. Liebenow points out further that some foreign observers are aghast at our federal budget-making, where each department of the government submits an estimate as to what it thinks it will require—or possibly ought to have—in order to operate during the ensuing year. Instead of this, such observers feel that each department should be assigned a sum to fulfill its rightful functions each fiscal year—that and nothing more.

Touching on the budget which Congress will be passing on in the coming months, and with particular reference to Mr. Eisenhower's statement that there might be a $4 billion surplus left over, President Liebenow said: "Congress is already dreaming of ways and means to spend it. Actually, that money is not surplus at all as long as we have such an unwieldy and astronomical debt. Any monies that might be saved from 'balancing' the budget and from elimination of the farm program would serve as a very tidy payment against the national debt of $290 billion.

"Put into a nutshell," he observed, "it appears that our past efforts both as a nation and as individuals, are being hampered and deflected by bureaucratic government. Such things as our incredibly unrealistic farm program, the loss of our agricultural and industrial world markets, our inability to effectively curb and restrain unscrupulous union power and the continuing weakening of the American dollar, if not stopped and soon, will be a grim comeuppance for all of us—labor, management, farmers and just plain folks."

In closing, Mr. Liebenow said, "Now is the time to do these things: prune drastically the number of federal bureaucrats on the pay rolls; clip back the budget; limit government to its proper house-keeping and policing functions—and above all—to get the government out of business and, what's equally important, keep it out."

Farmers Fertilizer Holds Annual Meeting

COLUMBUS, OHIO—Summarizing results of the Farmers Fertilizer Co. annual meeting, B. P. Redman, Jr., president, announced election of Doug Dye, Jr., to the post of vice president in charge of sales, and the appointment of Arthur Shonkwiler as purchasing agent for plant equipment and supplies and safety director.

The 47-year-old firm with offices and plant at 1464 E. 17th Ave. is headed by a roster of re-elected officers. Besides Mr. Redman, they include H. J. Thomas, secretary; Myers Y. Cooper, II, treasurer, and I. C. Armistead, assistant treasurer.

Farmers and industrial users of commercial fertilizers and sulphuric acid in Ohio, Indiana, southern Michigan and West Virginia are served by the Columbus-headquartered company.

Mr. Dye joined the firm as district sales representative in 1951. He was made assistant sales manager in early 1956. He became sales manager later the same year.

Transferred by Hercules

WILMINGTON, DEL.—Mancefield Barrow, a senior technical sales service representative in Hercules Powder Co. naval stores department, has been transferred to the department's Raleigh, N.C., office.

In his new duties he will be concerned chiefly with the agricultural program of the department in the Raleigh district. Mr. Barrow is a graduate agronomist and entomologist, and has had considerable experience in the use of toxaphene in cotton insect control programs and with other pesticides being developed by the company.

Mr. Barrow joined Hercules in May, 1952, as a technical sales representative. He is a graduate of Arkansas State College with a B.S. degree in agronomy, and the University of Wisconsin, from which he received his M.S. degree in entomology. He is a native of Paragould, Ark.

NAMED SOILS SPECIALIST

AUBURN, ALA.—Dr. Walter F. Sowell has been named soils specialist of the Auburn University Extension Service. In making the announcement, Dr. E. T. York, Jr., director, said that Dr. Sowell's appointment is in line with the extension's educational efforts to help Alabama farmers overcome their number one production problem—low soil fertility.

Beet Fertilization Viewed at Meeting

SAN FRANCISCO—Sugar beet fertilization was one of the topics discussed at the American Society of Sugar Beet Technologists' meeting attended by some 600 members of the society in Salt Lake City recently, according to Dr. Richard B. Bahme who represented the National Plant Food Institute as Western Regional Director at the meeting.

One of the most interesting approaches to the sugar content problem was made by Oswald S. Rose of British Sugar Corp., Peterborough, Great Britain. Mr. Rose addressed the general session, speaking on factors which affect the sugar beet industry and the implications of these factors on research.

"In earlier years when far less nitrogen was used," Mr. Rose said, "we also had seed that was bred more for sugar than for weight, we had closer spacing, and we didn't have to cope with anywhere near the same quantity of virus disease." Mr. Rose spoke specifically and at some length on the virus yellows disease, which not only lowers the vitality of the sugar beet, but also hits the sugar content hard and causes a drop in purity.

Al Ulrich, University of California, Berkeley, speaking on effects of root temperature on growth and sucrose concentration of sugar beets, noted the effects of adverse night temperatures. He said that high night temperatures tended to make sucrose drop under certain conditions.

"General implications for research for the fertilizer industry coming out of the conference would indicate that perhaps studies should be made reviewing the recurrence of undesirable and desirable combinations of factors affecting sugar production in beets," Dr. Bahme commented. "With this knowledge it could be predicted with some accuracy as to what percent of the time high fertilization combined with good cultural practices would produce maximum sugar yields and profits."

"When ideal environmental conditions exist for top sugar production, it is essential to have high fertilization in order to get maximum yields," Dr. Bahme said.

Among the more than 150 papers presented at the four-day conference were others of interest to the fertilizer industry. Some of these were: "Sugar beet responses to midseason applications of various nitrogen source materials," by R. S. Loomis, J. H. Brickey, F. E. Broadbent, University of California, Davis and El Centro, Cal.; "The effect of phosphate levels and the amount of fertilizer applied at planting time on soil tests, stand, chemical composition of foliage and on purity and sucrose content of sugar beets," by J. F. Davis and Don Thurlow, Michigan State University, East Lansing, and Grant Nichol of Monitor Sugar Co., Bay City., Mich.; and "Field studies on nitrogen depletion responses of sugar beets in relation to plant population," by R. S. Loomis and G. F. Worker, Jr., University of California, Davis and El Centro, Cal., respectively.

"Yield and zinc content of sugar beets as affected by nitrogen sources, rates of nitrogen and zinc application," by Louis C. Boawn, Frank G. Viets, and C. E. Nelson, USDA, Prosser, Wash., USDA, Ft. Collins, Colo., and Washington State University, Prosser, Wash., respectively; and "Yield and quality of sugar beets in variously fertilized legume and nonlegume cropping systems," by M. Amemiya and C. W. Robinson, USDA, Weslaco, Texas, and Colorado Agricultural Experiment Station, Grand Junction, Colo., respectively.

"Response of sugar beets to nitrogen depletion in relation to plant competition," by R. S. Loomis and Albert Ulrich, University of California, Davis and Berkeley, Cal., respectively; "The variability of sugar beet constituents as influenced by soil, fertilization, climate, and variety," by R. DeVere McAllister, Rex L. Hurst, and William H. Bennett, Utah State University, Logan, Utah.

Proceedings of the conference may be made available by contacting James Fischer, Beet Sugar Development Foundation, Robertson Bldg., Box 538, Ft. Collins, Colo.

WEEVILS ON THE WAY

GREENVILLE, TEXAS—Heavy boll weevil infestations may be in store for next summer, according to weevil counts made in several counties.

A total of 75 samples from wood trash were taken in four counties, and they included 25 locations. From these samplings, the average number of weevils found per acre was 6,671.

This means that a large number of weevils are overwintering in this area, even though the first freeze came earlier than usual. According to Charlie Davis of Greenville, association county agent for the Seven-County Entomology Assn., this means that farmers should consider even this early the advantages of an early season control program.

AT UTAH DEALER CONFERENCE—Paul Christensen (left), soils extension specialist for Utah State University, discusses the recently published fertilizer recommendation bulletin with speakers at the Utah Fertilizer Industry Conferences held Feb. 9-10 at Ogden and Provo. To the right of Mr. Christensen are Elroy Nelson, First Security Bank; Melvin Burningham, county extension agent; Rex Nielson, soils specialist, and Dean Farnsworth, Phillips Petroleum Co. Other speakers on the 2-day program included Elmer Christensen, Utah State chemist; J. P. Thorne, and H. B. Peterson, Utah State University, and F. Todd Tremblay, National Plant Food Institute.

THE SNIPES SEED & FEED CO. STORE, Bainbridge, Ga., is set back from the street, the curb stone lowered so that cars can pull right in front. This system of parking, which is used in the front and on the sides, makes room for 50 to 100 cars with a nursery department on an adjacent plot of land.

Field Demonstrations Help Texas Dealer Sell Chemicals

By JESS BLAIR
Croplife Special Writer

In staging dozens of plowing demonstrations, the Rice & Quillin Implement Co. of Seminole, Texas, has also developed a profitable sideline in fertilizers and insecticides. Their 1959 fertilizer sales amounted to 2,000 tons, while insecticides brought in a similar amount of income.

"We never operate on the theory that people must come to us," said J. C. Rice, who is co-owner with his partner A. D. Quillin. "We feel the only way to sell farm merchandise is to take it out to the field and show farmers what it will do. And with each demonstration we try to work in some good points for fertilizer and insecticides."

Usually when demonstrating a new plow, one of the partners

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A. D. QUILLIN (left) and J. C. Rice (center), co-owners of the Rice & Quillin Implement Co., Seminole, Texas, are shown getting ready to hold a field demonstration. In addition to showing farmers how to deep-break their land the partners will discuss the field's soil nutrients and what kind of fertilizer to use. Field demonstrations, which also include that of fertilizer spreaders and insecticide sprayers, help the partners sell 2,000 tons of fertilizer yearly.

THE SNIPES SEED & FEED CO., Bainbridge, Ga., pushed pesticides and other chemicals by putting the display right near the front door. Here they are shown at the display which catches customers coming and going.

In Bainbridge, Ga.

Pesticide Business Booms—Dealer Adds Department

By ROBERT H. BROWN
Croplife Special Writer

The consumption of pesticides and allied lines is growing so rapidly, a South Georgia dealer believes the time is ripe for farm stores, even in small towns, to develop a maintenance service for lawns, gardens, fruit orchards and so on.

With the arrival of summer, A. T. Snipes of the Snipes Seed & Feed Co., Bainbridge, Ga., is planning to launch such a service. He believes there is enough business even in a small market to justify such a division of his business for homeowners and industrial companies having landscaped grounds, as well as some farmers.

"We'll spray lawns, shrubs, gardens, and so on. I'm hoping to put one man on this kind of work," he said.

The feeling on the part of Mr. Snipes is that the field is growing so rapidly that it is almost a full-time business for one man to handle in the store. This one man can learn all there is to the business, guide customers in doing-it-yourself sales and also handle the maintenance business.

"My feeling now is that we will offer our services to home owners on an hourly basis rather than on a contract basis," he said.

Such a service would perform such tasks as spraying for wild onions, dandelions, crabgrass and the application of liquid foods, such as the customer may desire.

The average homeowner today has so many things to do around the home, that he just doesn't have the time to look after everything. Some things he must farm out, and Mr. Snipes figures that by the time a homeowner buys spray equipment and the materials, he can have the application services performed for him actually cheaper than if he did it himself. There is also the angle that the customer is so often confused as to the proper mixtures and varieties of materials that he would rather have the services performed.

"I believe there is enough business in a small town to justify such a service," he said.

At any rate, he says, it isn't going to be much of a risk trying out the merchandising of this idea. He will start off by using present personnel on the work. If it prospers, he can add another man, he says.

At any rate, Mr. Snipes is encouraged by the rate at which the chemical field is growing. So much so that when the company moved into a new location, with a brand new store, this department received one of the choice locations in the store.

The department is located near the front door so that customers coming in will see it the very first thing. When the customers leave, it is the last thing they see before opening the door.

Very often, Mr. Snipes has found that customers on the way out will stop at this department, look at something and buy it. With the location near the front door, the department serves as a means of reminding customers they may have forgotten

Turn to NEW DEPARTMENT, page 15

42 Factors Affecting the Yield of a Crop

By H. A. Lathrope, Agronomist, Allied Chemical Corp.

The most important factors affecting the yield of a crop can be grouped into six major and sub-classifications as follows:

I. Chemical Balance in the Soil

1. Nitrogen
2. Phosphorus
3. Potash
4. Calcium
5. Magnesium
6. Manganese
7. Molybdenum
8. Zinc
9. Copper
10. Sulfur
11. Sodium
12. Iron
13. Boron
14. Chlorine
15. Oxygen
16. Soil pH

II. Physical Fitness of the Soil and Sub-soil

1. Size of soil particles
2. Compaction
3. Pore space
4. Aeration
5. Organic matter
6. Tilth
7. Slope

III. Biological Activity Above and Beneath the Surface of the Soil

1. Insects
2. Fungi
3. Diseases
4. Bacteria

IV. Hydrological

1. Rainfall—frequency & amount
2. Humidity
3. Percolation
4. Drainage

V. Ecological

1. Temperature
2. Sunshine
3. Wind
4. Length of day

VI. Management

1. Hybrid
2. Population
3. Adaptation
4. Planting date
5. Weeds
6. Cultivation
7. Harvesting

WHAT'S NEW

IN PRODUCTS · SERVICES · LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 6026—Product Catalog

Schelm Brothers, Inc., announce the availability of Catalog No. 60, containing descriptions of its line of application equipment for nitrogen solutions and liquid mixed fertilizers. The catalog has illustrations and drawings of all the major components of its line, plus specifications and data on each. Sections are included on aluminum tanks, solution transfer units, skids for tanks, pull type applicators, spray booms and a section on repair parts and accessories. A price listed is inserted. For copies of the catalog check No. 6026 on the coupon and mail.

No. 6028—Fertilizer Spreader

A fertilizer spreader that can be attached to the plow or to the front end of the tractor has been announced by Greystone, Inc. Called the "P.D.Q.," the spreader spreads fertilizer ahead of the plow, with the plow then turning the soil and plowing under the fertilizer. Spread in this way, the company says, the fertilizer cannot wash or blow away. It handles all dry commercial fertilizers, the company says. For more information check No. 6028 on the coupon and mail.

No. 6029—Scale Literature

The full line of Toledo scales for industrial use is presented in literature released by Toledo Scale, Division of Toledo Scale Corp. The broadside illustrates and describes standard Toledo weighing equipment including portable, bench, floor, built-in, motor truck, counting, net weight packing and mail and parcel post scales. Several types of Toledo equipment custom-built to user needs are also briefly described. For a copy check No. 6029 on the coupon and mail.

No. 6030—Brochure on Weed Killers

Reasor-Hill Corp. announces the availability of a brochure called "Now—Granular Weed Killers." The color illustrated publication is a reprint of an article by a U.S. Department of Agriculture research engineer. It contains information on granular weed killers, including advantages and disadvantages. Microscopic illustrations of some common carrier materials are contained. For copies of the brochure check No. 6030 on the coupon and mail.

No. 6027—Product Display Stand

Douglas Chemical Co. announces that it will again offer its four-color wire rack display stand to retailers for a compact point-of-purchase piece. The stand, designed to hold a large assortment of Douglas products

for use in controlling grain destroying insects and pests, measures 4 ft. high, by 2½ ft. wide. Along with the rack, a complete point-of-purchase display program is offered, the company says. For complete details check No. 6027 on the coupon and mail.

Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

No. 6021—Sprayer Manual

Century Engineering Corp. has published a new sprayer manual for 1960, containing information on how to select the right sprayer for application of pesticides on livestock, pastures, and row crops; and also the correct type of equipment for use in applying fertilizers. Diagrams of spray patterns are shown, as are cut-away pictures of equipment. Written instructions are presented to stress the importance of timing, descriptions of jet sprayers and boom sprayers, and a chapter on the control of weeds and insect pests. The booklet is available by checking No. 6021 on the coupon and mailing to this publication.

No. 6024—Sprayer Catalog

Universal Metal Products Co. announces the availability of a 24-page catalog, known as U-60, illustrating its complete line of sprayers, dusters and allied products. The catalog includes five pages on the company's "Stroll'n Spray" compressed air series. Also included are dimensions, specifications and shipping information on every other company product. Covered are the hose-end sprayers, pump-gun sprayers, easy-carry oval-tank compressed air sprayers, power sprayers, slide sprayers, flame sprayers, fire fighter sprayers, knapsack sprayers and many others. For copies check No. 6024 on the coupon and mail.

No. 6022—Tank Fittings

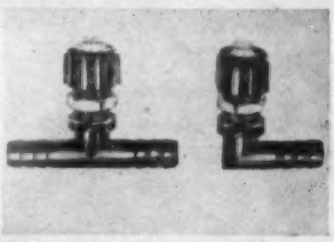
Information on its line of valves, gauges and indicators is available from Texas Tank, Inc., in a bulletin describing its full line of tanks for holding anhydrous ammonia. Some tanks are for stationary use and others are mounted on farm wagons for transporting the material to work locations. Auxiliary equipment includes outage gauges, vapor return, pressure gauges, liquid level gauges, combination liquid fill and withdrawal valves and hose assemblies. Full information is available by checking No. 6022 on the coupon and mailing to this publication.

No. 6017—Air Row Crop Attachment

John Bean Division of Food Machinery and Chemical Corp. announces the availability of the Model 10-RC Aircrop, equipped with the Prestomatic push button remote control system. The attachment sprays a 40 ft. to 50 ft. swath. A uniform spray pattern is assured by seven disc-type nozzles and a specially designed discharge head equipped with air directing vanes, the company says. The discharge unit can be rotated to take advantage of prevailing winds. Suited for use with sprayers of 10 gpm capacity and larger, the model is equipped with a seven-blade aluminum 21 in. axial flow fan which is statically and dynamically balanced. For details check No. 6017 on the coupon and mail.

No. 6019—Hose Connector Nozzles

The Delavan Manufacturing Co. has announced the addition of nylon hose connector nozzles to its line of agricultural sprayer nozzles and accessories. Designed as a simple, inexpensive method of producing a corrosion resistant boom, the connector nozzles can be used with ⅛ in. cor-



rosion resistant hose with single or channel iron boom, the company says. They are available as "T" or double hose inlet and "L" or single hose inlet. The "L" shape connectors will be needed for boom and end nozzles. Lock nuts are supplied as standard equipment. For details check No. 6019 on the coupon and mail.

No. 6023—High-Clearance Sprayer

Another model Hahn Hi-Boy Sprayer has been added to the line of Hahn, Inc. Designated Model H-180, the machine is designed to provide low-cost spraying for any size farm, the company says. The model has many of the same features as more expensive models in the line, including aluminized-steel tank (150 gal.) and eight-row Ever-Level boom. Other features include an 18 h.p., two-cylinder Wisconsin engine with

Send me information on the items marked:

- ☐ No. 6017—Air Row Crop Attachment
- ☐ No. 6018—Folder on Insecticides
- ☐ No. 6019—Hose Connector Nozzles
- ☐ No. 6020—Hose End Sprayers
- ☐ No. 6021—Sprayer Manual
- ☐ No. 6022—Tank Fittings
- ☐ No. 6023—High-clearance Sprayer
- ☐ No. 6024—Sprayer Catalog
- ☐ No. 6025—Spray Mulch Booklet
- ☐ No. 6026—Product Catalog
- ☐ No. 6027—Product Display Stand
- ☐ No. 6028—Fertilizer Spreader
- ☐ No. 6029—Scale Literature
- ☐ No. 6030—Brochure on Weed Killers

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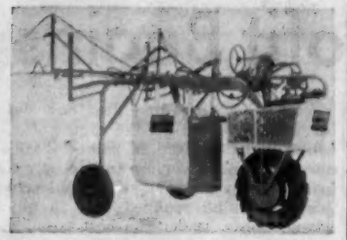
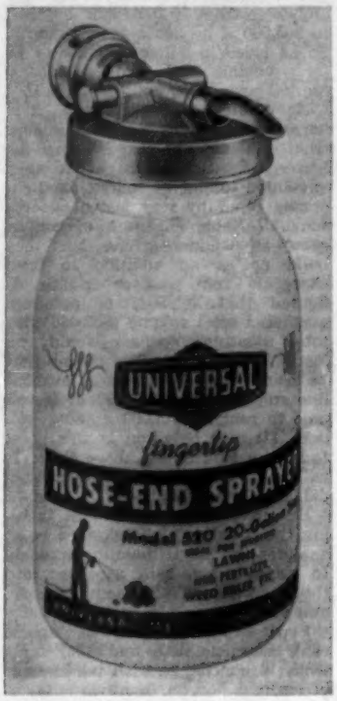


four speeds forward and one reverse; "Live" pump drive for instant spray pattern; tread width adjustable to work 38 in., 40 in. and 42 in. rows, and boom height adjustable from driver's seat from 1 ft. to 12 ft. For details check No. 6023 on the coupon and mail.

No. 6020—Hose End Sprayers

A hose-end sprayer series featuring automatic blending, push-button shut-off valve and a shatterproof polyethylene jar has been introduced by Universal Metal Products Co., division of Air Control Products, Inc. The sprayer has two metering heads, a 6 gal. capacity on Model 506 and a 20 gal. capacity on Model 520, and



has brass internal mixing chambers which blend the spray concentrate and water at the right ratio, the company says. The conventional quart-size, shatter-proof polyethylene jar is used in both sizes. The push-button shut-off valve allows operator to shut off the spray at the sprayer. Both sizes have a completely adjustable nozzle for any angle of spray. For details check No. 6020 on the coupon and mail.

No. 6018—Folder on Insecticides

A folder containing information about Diazinon insecticide products has been released by Geigy Agricultural Chemicals, division of Geigy Chemical Corp. The folder contains brief information about Diazinon 25E, Diazinon 20S and Diazinon 2D. For copies check No. 6018 on the coupon and mail.

No. 6025—Spray Mulch Booklet

Alco Oil & Chemical Corp. announces the introduction of "Vulcanol" for use as a spray mulch along highways and landscapes to control soil erosion and speed seed germination. A color booklet, describing in detail the advantages, applications and equipment required; recommended dilutions, typical Vulcanols, and the colors in which they are available, can be obtained by checking No. 6025 on the coupon and mailing to this publication.

New Fertilizer

RICHMOND, VA.—Virginia-Carolina Chemical Corp. is introducing a new fertilizer this spring and backing it with the most intensive advertising campaign in the company's history, a spokesman said.

The new product—V-C Harvest King—will be sold from all of V-C's 23 sales offices across the eastern two-thirds of the country.

Chief difference between Harvest King and V-C's regular fertilizer is that the new product is fortified with a combination of six trace elements crops require, the company says. These elements will be added to the fertilizer via an exclusive mineral mix the company calls "Vitel."

Nutrient Deficiencies Noted in Irrigated Texas Soils; Good Soil Tests Prescribed

BROWNFIELD, TEXAS—Many irrigated soils in the cotton belt of West Texas have reached the stage where nutrient deficiencies are becoming common. When irrigation was started about eight or ten years ago, very little fertilizer was used. Soil nutrients were more balanced, and only nitrogen seemed to be lacking.

Much depletion of plant food has taken place since then, according to the technical administrator of the fertilizer division of the Goodpasture Milling Co. This is L. T. Stone, chemist.

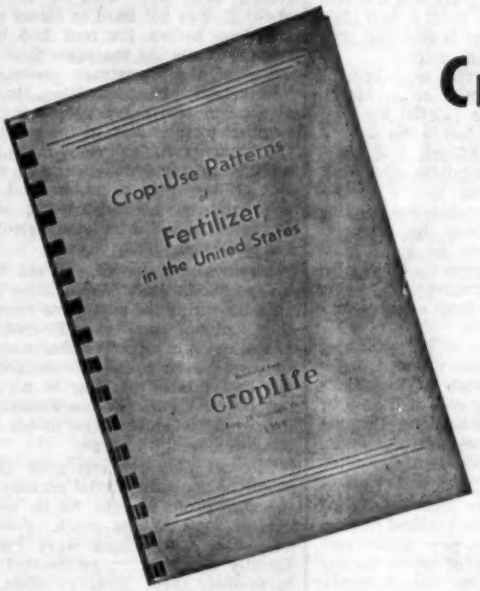
"The first thing we get from heavy cropping is a lowering of nitrogen," said Mr. Stone. "Then a few crops later we find phosphorus in short supply. These we've taken care of by fertilizing with such mixtures as 13-13-0 and others.

"Now our new type soil tests show there is a growing shortage of potash in the soils, particularly where a farmer is striving for two bales to the acre. This last year we got good results with a 10-15-5 and a 14-14-7, as it gave the cotton a better quality.

"The next thing to show a depletion will likely be magnesium, and after that the trace elements. So fertilizers must be made to include these elements. That is why the soil tests are so important. Anyone applying fertilizer without an adequate soil test may be wasting part of it, and he cannot possibly get the economical yields by just using what a salesman or his neighbor tells him."

Mr. Stone says the soil test is not a one-time thing. The wise farmer will try to know from year to year what his soil contains and what elements are needed for the highest yields.

You'll get a better understanding of the fertilizer market from this valuable new book



Crop-Use Patterns of Fertilizer in the United States

by

J. R. ADAMS L. B. NELSON D. B. IBACH

U.S. DEPARTMENT OF AGRICULTURE

This significant report was compiled by the U.S. Department of Agriculture after thorough studies of fertilizer use in the United States. Crop-Use Patterns covers questions which, until now, have not been adequately answered. Crop-Use Patterns is based on information gathered from every fifth farm surveyed in the most recent U.S. Census . . . providing a broad base of national information.

Some of the questions answered are:

- what portions of croplands receive fertilizer
- how fertilizer is used among major crops
- how much acreage for each crop is fertilized

Specific fertilizer uses analyzed are:

Corn, Tobacco, Wheat, Oats, Cotton, Potatoes, All Crops and Cropland Pasture, Hay and Cropland Pasture

All graphically presented with 33 maps and numerous charts.

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Break-Even Point Tells Where Profit Begins

By SAMUEL BERKE
Associate, Berke-Kimball Associates
Management Consultants
Brooklyn, N.Y.

Break-Even Point and Chart

Good Old Charlie Benson knows how to run his store. It's simple: You sell goods, people buy them, you add up sales receipts. And there you are.

There you are—but where are you? In the case of Charlie, the answer is simple: at the point of commercial collapse. He simply does not understand that today's dynamic management applies many different types of control techniques. One of these is the continuing study of the break-even point and its graphic representation, the break-even chart.

● **Trouble in the Store.** Al Mercer, like yourself, runs a small store. He is located in a good, "well-to-do section" of town, and he has plenty of customers. His sales people are busy and Al, until one black week in the fall of 1958, was certain that he owned a commercial gold mine.

That week, however, he learned different. Deciding that he wanted to add a new line to his merchandise, Al made a deal with a new supplier. The man did not know Al and demanded part cash payment on delivery. Al reached into the till—and found it nearly empty. He couldn't understand it. The next two days he worried, and the next two nights he worried a little more. Then shock No. 2 hit him.

He had ordered a rather glamorous neon sign for his window and a couple of display cases for his store—after all, couldn't he afford a few improvements? When the time came to pay the bills, he again dug into the till—and came up with the same depressing answer: not enough money!

● **What's Wrong Here?** It was at this point that Al went to see his banker friend, and asked his opinion and advice. "I don't know what's wrong, Ben," he admitted frankly. "Business has been pretty good, but I don't seem to make much profit."

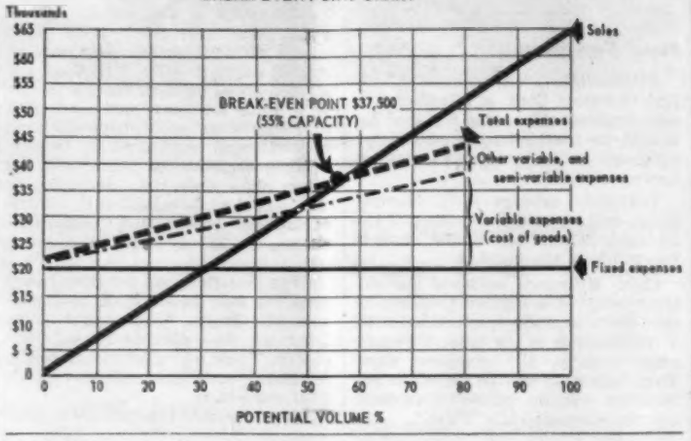
To Ben Heston, this sounded like a familiar story. After questioning Al closely, he thought he knew at least one way to solve Al's problem. "Tell you what," he advised his friend. "Why not make up a break-even point chart every month? See if that won't help."

"I'm not sure I know what that is," Al replied.

"Nothing mysterious about it," the banker said. "The break-even point is the place where you neither make nor lose money. Your accountant can help you with the first couple of charts. Then you can do it on your own."

Following Ben's suggestion, Al asked his accountant to help him prepare a break-even chart. This, with Al looking on, the accountant did. The next month, Al drew up the chart, and this time it was the accountant who looked over his shoulder. By the third month (it was now November, 1958) Al prepared the chart without help. And every month since then he has put together a chart, usually on the last day of each month.

BREAK-EVEN POINT CHART



● **What the Chart Tells.** Both the banker and his accountant had told Al that, while the chart was a useful checking device, by itself it had little meaning. "The chart is charting your past," the accountant quipped.

The meaning of that quip became evident to Al pretty soon. Month after month, as he plotted his past record, he gained increasing insight into his business affairs, and could see clearly and unmistakably what had been happening to his costs—both fixed and variable—and to his sales line. By aligning the charts at the end of the year, he got a good picture of the progress he had made. And he had made progress. Of course, this did not happen from a mere scanning of the charts.

Instead, conscious of the advice of his banker and accountant and acquiring a good grasp of his firm's situation, Al at the end of 6 months made certain investigations. But before we see what they were, let's note what the charts told him about his store.

● **What the Charts Told Al.** As Al studied his charts, he realized why he had been unable to pay those "special" expenses out of store income and why there was not enough money to pay cash for his new merchandise line. Despite good customer traffic, despite a fairly high sales record, he noticed that the profit area—that part of the chart that lies between the total expense line and the profit line—was very narrow indeed.

In February, 1959 his "break-even point" was $37,500. That is, his sales had to amount to that much in order for him to "break-even," e.g.—to pay his fixed and variable expenses and to take care of his merchandise. Unfortunately, while the profits from sales were sufficient to take care of those expenses, they were not high enough to give him a fair profit for himself. Obviously, something was wrong. But what?

Comparing the February chart with previous charts, he realized that his fixed cost line had moved up. The reason why, now that he thought about it, was not hard to figure out: Not long before, his rent had been raised slightly. At the same time, because of the Christmas season, he had increased his advertising. He had also hired two extra people in November, to take care of the expected Christmas rush. Obviously, there was nothing he could do about the rent. But unlike other years, he had not cut back on his advertising after Christmas, nor did he let the two extra people go.

Meanwhile, however, he had kept his prices in line. While sales had gone up during the past three months, they had not gone up sufficiently to insure much of a profit (income above the break-even point). He decided to cut back his advertising to normal, but because business conditions had improved he let only one of his two temporary employees go.

But Al also realized that there might be some additional reasons for the slim profit margin. So he had a careful look at his stock. Finding that two of his lines were exceptionally slow movers, he decided not to re-order them. Thus, in effect, he would be tying up less cash, and would, instead, be able to concentrate on more profitable items.

The Chart: Preparation and Meaning

Now let's see just how Al Mercer made up his break-even chart.

● **Charting the Chart.** You, too, can prepare such a chart. You can do so, in fact, by following the steps used by the Al Mercer Co. (name disguised), provided that you keep in mind that his company's experience and yours may obviously be very different. In any case, Al started with several figures which he built up from past experience. They were:

1. Maximum monthly sales, with existing facilities of merchandise and store personnel, location, and line of goods (100% of potential volume) .....$65,000.

2. Fixed expenses (rent, heat, light, insurance, taxes, and the like) which stay the same no matter what the volume of sales may be .....$22,000.

3. Average monthly sales can actually be expected to run around 80% of maximum .....$53,000.

4. Variable expenses (cost of goods sold, commissions to sales people, wrapping, delivery, and the like) based on $53,000 sales run around .....$23,000.

Seeing these figures, one important question leaps to mind. Just how did Al arrive at the $65,000 figure (or, what he called 100% of potential volume)? The answer, of course, is experience. In other words, thanks to his records he realized that in any given month, under the best possible conditions, he and his staff could sell that amount of merchandise. (Obviously, again, in your case that figure will be different.)

Once Al had the above facts and figures at his command, he set up a blank chart on which to enter the figures and plot their relationships. Then he laid off ten divisions of equal size on the horizontal axis and numbered them 0, 10, 20, 30, and so on up to 100.

This scale he then labeled "Potential Sales Volume in %." Then he laid off 14 divisions of equal size on the vertical axis, and numbered them 0, 5, 10, 15, and so on up to 65. This scale he labeled "Dollars in Thousands."

Now he was ready to plot his figures on the blank chart. First, he drew a line showing sales for a given month. (This, of course, could vary anywhere from $0 if he sold nothing, to $65,000 if he has a record month. So he ruled in a line starting at $0 for 0 volume and ending at $65,000 for 100 percent potential volume.)

He plotted fixed expenses as a horizontal line at $22,000, because from his store's past history he learned that this was what they amounted to and, of course, fixed expenses generally stay just about the same. Variable expenses, of course, grow as volume grows, but they build up as an addition to fixed charges. From past experience Al figured that at 80% of potential maximum sales volume ($53,000), his total monthly expenses would run just about $43,000. This meant that he could construct a total expense line running from $22,000 at 0 volume to roughly $45,000 at 80% volume. (It may help you at this point to have a look at the above chart. It will show you graphically what Al did, and how he did it).

But many small marketers tackling the problem of break-even point analysis like the arithmetic approach. In using it you split expenses into three classes: Fixed, semi-variable, and variable.

Fixed expenses, of course, include rent, insurance, taxes and other items which don't change with the amount of business you do. **Semi-variable expenses** are those such as advertising which vary to some extent according to volume but usually are controlled more as a matter of management policy. **Variable expenses** are the ones like cost-of-goods-sold and commissions to sales people which fluctuate in direct relation to the rate of sales.

Once you have your expense figures segregated on this basis, you divide the total fixed and semi-variable costs by the margin of sales dollars over variable expense dollars. The answer tells you what volume you must reach in order to balance revenues and expenses.

Here's a specific example: From existing records, the Fairview Co. (name disguised) knows that it has fixed charges of $625 each month and semi-variable expenses of $210. These total $835. Also based on past experience, Fairview knows that 60¢ of each sales dollar goes for directly variable expenses. In other words, the sales-minus-variable expense margin is 40%. Thus $835/.40=$2 087.50; this is the monthly volume the company must produce to break even. If operations are running below this level there are three choices of action if the firm is to become profitable: (1) cut costs, (2) increase sales, and (3) do both at once.

The Chart: Its Uses

Al had not only learned how to make a break-even chart, but also its

SUMMARY

What every small business owner needs is a clear idea of where his firm stands. Is it making a profit? How much of a profit? Are costs out of line? And—most important—at what sales volume does his profit really start?

This article suggests a way of answering these questions. It spotlights a technique which may be familiar to you: a break-even point study. The break-even point is the place where you neither make nor lose money. To find it, you need good records of your store's operations. Then you can translate those records into a chart—the break-even chart—which is a graphic representation of the break-even point under a given set of conditions.

Knowing where your break-even point is will solve no problems—it is merely a warning device: If it shows, for example, that sales amounted to $25,000 last month, and that fixed plus variable costs (to make a dramatic example of this assumption) amounted to $24,500, obviously something is wrong. Perhaps the firm is paying too much for the goods (variable cost) they buy or, perhaps, rent and utilities (fixed costs) may be too high for that type of operation. Of course, there are many other possible combinations. In any case, having a monthly break-even chart has helped many managers to keep current on the actual state of their businesses. (This article was prepared through the cooperation of the Small Business Administration.)

use as a tool of management control which reflects what may reasonably be expected of costs and profits under the set of conditions prevailing when the chart is made. Obviously, conditions change; therefore, Al prepared a new chart every month.

● **The Chart: A Management Aid.** Al had also learned that there are many specific uses to which such a chart can be put by management. Among these, some of the more significant ones are the following:

1. An Aid for Budgetary Control. It helps to indicate what changes—if any—you need to make to bring expenses into line with income.

2. An Aid to Improve and Balance Sales. It acts as a warning signal to alert you to potential trouble in your sales program. If your sales relative to other things are not as high as you think they should be, this fact will obviously show up on the chart. Then it may be time to re-evaluate your (a) sales techniques, (b) training of sales staff, and (c) lines you carry in relation to the customers who patronize your store.

3. An Aid to Investment and Credit Control. It provides answers to specific questions such as the following: (a) How much of the present sales volume can the company lose before profits disappear? (b) How much will profits increase with an increase in volume?

4. An Aid in Determining Price Policy. It visualizes the probable effects on profits of price changes in combination with other changes. For example: (a) What changes may be expected in profits with changes in price, assuming all other factors remain constant? (b) If prices are reduced, what is the most practical combination of volume and cost changes to expect and what is the net effect of the combination of changes on profits? (c) Similarly, if prices are increased, what combination of changes and what effect on profits may reasonably be expected?

5. An Aid in Discussing Wages. It assists management by: (a) quickly reflecting the probable influence on profits of proposed wage changes (assuming no change in employee efficiency), and (b) providing visual aid in determining possible economies and efficiencies that might protect the profit position of the company.

6. An Aid in Appraising Merchandising Policies. It will enable critical examination of the "merchandise mix." A break-even chart for each line is a valuable help in visualizing which products should be pushed and which may be allowed to coast or possibly be eliminated.

7. An Aid to Assess Further Capitalization and Expansion Decisions. It provides a visual means of appraising in advance the wisdom of making capital expenditures which may change cost structure of the business.

The break-even chart helps to keep management on the alert to find ways and means of improving its margin of safety. If all efforts to reduce the break-even point fail, the chart serves as a constant reminder to management that it is operating on a thin margin of safety. Under such conditions all decisions must be weighed in the light of their effect upon that margin. As a result, programs may be undertaken to stabilize the margin and to protect it in the event of a business recession.

● **Special Charts: Quick Reference.** In addition to a monthly chart, special break-even charts can be developed for your business at any time you need them to give you rapid information on business planning, gross profit, margin goals, expense goals and other data peculiar to your type of business. Where sales volume fluctuates and competition for the consumer's dollar is fierce, costs must be controlled if profits are to be realized. The break-even analysis is an important tool for profitable control of your business. It is important because it can treat volume as a variable. With its aid, management is able to set goals in terms of relationships between costs and profits under conditions of varying volume. Realization of these goals requires the exercise of proper managerial control over costs and revenues.

● **Chart's Basis: Good Records.** Since the break-even analysis and the preparation of the break-even chart are conditioned upon the availability of adequate accounting records, it is obviously important that such records be correctly set up in the first place. Therefore, work with your accountant or bookkeeper on the development of a suitable records system if you already haven't one. Once in operation charts are speedy and reliable warning signals alerting you to potential of actual dangers in your organization.

Potash Firm Moves Office

NEW YORK—Southwest Potash Corp. has moved its New York offices to Rockefeller Center in the midtown area of Manhattan. The new address is 1270 Avenue of the Americas, New York 20, N.Y. Telephone is PLaza 7-9590.

The company's other offices will remain the same in Atlanta, Ga. and Des Moines, Iowa.

QUARTERLY DIVIDEND

NEW YORK—The board of directors of Texas Gulf Sulphur Co. declared a regular quarterly dividend of 25¢ per share on the 10,020,000 shares of the company's stock in the hands of stockholders. The dividend is payable March 15, 1960 to stockholders of record Feb. 29, 1960. This is the company's 154th consecutive quarterly dividend.

"He's been doing it for 16 years, but some day he'll start a fire with that pipe."

OSCAR & PAT

The phone rang about 10:00 a.m. in the Schoenfeld & McGillicuddy Farm Store, and Tillie Mason, the plump, ulcerish bookkeeper answered.

"Yes, this the farm store . . . You want Mr. McGillicuddy to talk to your Garden Club about preparing soil for flowers and vegetables . . . All right, Mrs. Gerhard, I'll tell him when he comes in, and then I'll phone you confirming the date."

Oscar Schoenfeld, rotund, balding and figuring discounts at his desk, turned around in his swivel chair. "Ach, what's this?" he asked critically. "Are customers gettink crazy? Now they ask us to come andt talk to their clubs. For free?"

A pained look came over Tillie's good natured face. She was about to say something, when the phone rang again. "Hello, Mr. Haskins . . . Yes, I know you. Of course . . . You want Mr. McGillicuddy to talk to your farm group at Hickory Corners, I'll check with him and phone back. He isn't in right now. Thanks for calling."

Oscar's face was twisted in a frown. "Ach, Tillie, what's this? Are people goink crazy—these calls for Pat to talk. What gifs?"

Tillie sighed. "Oh, Oscar, I might as well tell you. Pat got out a letter yesterday to garden and farm clubs in the trade area. He offered to come and talk to their organizations on proper fertilization, soil testing, planting directions, weed spraying, barn and poultry house spraying and other things. Most of the secretaries of these clubs must have gotten the letter a few hours ago. We've got two calls already."

"Promotion! Promotion!" Oscar choked on the words. "How couldt he get oudt that letter here and me not see it?"

"Oh, he intends to tell you about it. But he wrote the letter longhand, gave it to me to type a master copy. Then he took it to a mimeograph shop and had them run it off. I think Pat and Nora stuffed the letters at home and stamped them."

"Aha!" exclaimed Oscar. "So that is the way the schnobbler does it. He does not want me to know anythink aboudt it. He figures he can run his endt of the business anyway he pleases. Well, there is only one way he is runnink it—into the hole!"

"Well, when there are partners in a business, each has something to say," Tillie put in. "And the jobs usually are divided."

"He shouldt not have any chob unless I'm right aroundt watchink him so he don't spendt too much money," Oscar snorted. "Why can't he just sit still for awhile and chust let the business run by itself. Goink oudt and talkink to garden and farm clubs. Ach, is he runnink a speakers' bureau? This is a fertilizer business. First thing you know that Irisher will be runnink for governor. I hope he makes it. Then he will be oudt of this business and shpendting somebody else's money, not mine."

A pudgy unshaven farmer named Will Erdmann came ambling into the salesroom, a newspaper in his hand. "Say, Tillie," he asked, "is Pat around?"

"No, but I expect him soon. Can we help you?"

Erdmann unfolded the newspaper. "Say, that is quite an ad Pat's got. I want to line up a speaking date for him at our dairymen's meeting next month. Lots of us have many acres of pasture. Maybe he could talk on how we can build our pastures through fertilization."

Oscar turned around quickly in his swivel chair. "Ach, let me see that paper." He came over and took the paper from Erdmann's hand.

"Himmel!" he said. "A quarter page adt. Andt he's got his picture in it. Is he so stuck-up he has to use our money to run an adt to print his picture? Tillie, didt you know this adt was goink to run, too?"

Tillie shook her head. "No, I didn't, Oscar. Neither you nor Pat tell me everything!"

William Erdmann chuckled. "Looking at you, Oscar, gives me an idea. How would you like to come and talk to a future meeting of our club? You could tell us how to cut corners, how to hold down expenses. That's important, too, nowadays."

Oscar looked sharply at Erdmann, as though he had come into contact with a new idea. "Maybe I wouldt do that. I wouldt tell you fellers what is wrong with this country. Everybody schpendting, schpendting all the time and runnink up big bills. Andt I wouldt tell some members of your club to pay their bills a little faster, too."

"Don't you want people to spend money for fertilizer, Oscar?" asked Erdmann, his eyes mirroring puzzlement.

"Yah, sure I want them to buy—for cash. I do not want them to buy and charge it, so we have to wait three to six months for our money. We lose interest. Our money is tied up and then we haf to borrow at the bank. All because some loafers don't pay. I don't want that kindt of business."

Erdmann chuckled. "Well, you ain't got any complaint about me? I'm all paid up here. I don't owe you a cent."

"No, you don't," agreed Oscar, "but, ach, it took you about four months to pay the last $75. Andt a couple of other times you took six months to settle up."

Erdmann's face got red. "You're a corker, allright. Keep on insultin' me and I'll go over to the other place and buy my fertilizer. They co-operate with a guy." He turned to Tillie. "I'm goin' over to Happy's for coffee and a doughnut. If Pat comes in send him over. Tell him I'm mad."

He moved to the door, muttering. "Golly, I thought my wife was just about the hardest person in the world to get along with. But this Oscar——"

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Dependable Farm Equipment Since 1886

JOHN BLUE CO., INC.
HUNTSVILLE ALABAMA

FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Rangeland fertilization does pay dividends in more meat produced per acre, when properly utilized, according to the California Fertilizer Assn. This was the essence of a report by Dr. R. Merton Love, chairman of the department of agronomy, University of California, at a recent Western Agri-Forum in Berkeley.

Dr. Love reported that grain and forage production is being pushed farther and farther into the upland areas where the land isn't nearly as productive naturally as it was in the bottom lands, now taken over by row and tree crops, and urban development.

He said that few Californians realize the potential which lies ahead in the 65 million acres of land which comprises the state's upland areas. He pointed out that an agricultural economy was developed in the valley areas which is unmatched in the world, because of intelligent application of research, know-how, and the fact that our people were not satisfied with the status-quo. We should not be any more satisfied with the way nature has developed our uplands than we were with the native status of our farm lands when we moved on them, he added.

Dr. Love pointed out that considerable confusion has existed about whether it pays to fertilize rangeland or not. Then he said that "there are five conditions that must be realized before a range operator can profitably use fertilization:

1. Initial soil fertility must be low.

2. Climatic conditions must be favorable for increased growth when it is needed.

3. Plant species present must respond to higher fertility levels.

4. Changes in management are usually necessary to obtain full benefits from fertilization.

5. Fertilization must solve the problem more economically than other means.

"When we know the potential of a particular site through research, the particular soil and the possibility of the fertilization of that soil, there is no question at all that fertilization will pay."

★

Five years ago the experiment stations in the west Texas irrigated belt sometimes hesitated at recommending fertilizer for cotton. Now they are the biggest boosters for proper fertilization, and have done much to acquaint farmers with the different kinds and methods of application.

Through field test in 1959 the Lubbock Experiment Station and Ollie Liner, Hale County agent, have come up with some magical results. Yields of 1,400 lb. of lint cotton per acre were grown by using fertilizer, as compared to 879 lb. on the same type of land untreated. Another test plot made an extra 592 lb. more per acre.

Several farmers on whose land the fertilization studies were made reported that they more than doubled profits by the use of fertilizers. Main types used were phosphorus and nitrogen.

On cotton following grain sorghum a combination of 120 lb. nitrogen and 40 lb. of phosphorus produced 1,412 lb. of lint per acre. By using 80 lb. nitrogen, 40 lb. phosphorus and 40 lb. potash, one field produced 1,427 lb. per acre.

Land fertilized in 1958 had quite a lot of carryover in plant food, according to Harvey Walker, fertilizer specialist at the station. He said that fertilizer in 1958 plus the carryover in 1959 in which none was used on some farms brought the two-year net profit to more than $125 per acre.

★

The use of liquid fertilizers is becoming widespread and they are proving to be a good source of plant nutrients. But, says W. F. Bennett, extension soil chemist, liquid and dry fertilizers are generally of equal value for improving crop yields.

A summary of 27 experiments in which liquid and solid fertilizers were compared showed little difference. The experiments covered a wide area and the same methods of application were used. In only three instances liquid fertilizers produced greater yields than did the solid or dry plant food. In one instance, greater yields resulted from the use of solid or dry fertilizers. In these cases, Mr. Bennett said, differences in yields were small and were not apparent on the same soil type in succeeding years.

The main considerations for making a determination of which type of plant food to use are cost and ease of handling and application. In some areas the costs are comparable, but in others, buyers will find price differences. A little shipping will show these differences, adds the chemist.

Generally, liquid fertilizers are easier to handle and apply, provided proper equipment is available. On the other hand, points out Mr. Bennett, storage tanks and special applicators required with liquids are not required when dry fertilizers are used.

From the standpoint of increased crop yields, either type of plant food, if used in the correct amounts and properly applied, should give equal results, Mr. Bennett said.

★

Fertilized ponderosa pine trees in eastern Washington produced 29% more diameter growth than non-fertilized trees and in western Washington nitrogen stimulated the rate of growth and produced greener needles in Douglas Fir tests.

These are some of the preliminary results announced by Washington State University and University of Washington scientists recently.

M. M. Mosher, associate forester at WSU, and Dr. Stann Gessel, UW forester, said it is their opinion after recent research studies that fertilizers could be as important to the forestry industry in coming years as it has been to farm crops in the past decade.

Mr. Mosher in his tests of ponderosa pine found that lack of moisture in eastern Washington forests can limit growth even more than lack of fertilizer. Plots receiving fertilizer and one irrigation in the summer grew 127% faster than plots receiving neither.

Dr. Gessel also found that late summer applications of nitrogen to Christmas tree plantings on poor soil improved the green color by harvest time and there is some evidence (as yet unproved) that fertilized trees have a better keeping quality.

Fertilizer applied to Christmas trees in the spring, however, may have an adverse effect by stimulating too fast growth.

The researchers also found that fertilizer increased seed cone production, an important factor in reforestation. And fertilizer applied to seedling transplants will stimulate growth, increase vigor and help young trees get ahead of competing brush and vegetation.

The catch, of course, is that forest animals prefer the fertilized seedlings to those which have not been fertilized.

Fertilizer pellets of long lasting qualities for plantings with the seedlings have been developed and are being tested by Crown Zellerbach Corp., Weyerhaeuser Co., Simpson Logging Co. and others.

The researchers agree that more research is needed on the physiology of trees, on tests for fertilizer needs on forest soils, on methods of fertilizer application, and on the economics of using fertilizer for faster timber production.

★

It has been observed from experiments conducted in Western Colorado that nitrogen will significantly increase yield and shoot growth of Bing cherries. A report on these experiments was presented by E. A. Rogers, A. M. Binkley, and Robert Stebbins, of Colorado State University at the recent Colorado Fertilizer Conference held in Ft. Collins.

"The total production of cherries for five years was highest for three treatments where nitrogen was added," according to the three men. "However plots treated with a complete nitrogen, phosphate and potash fertilizer did the best in 1955 and 1959, and in 1956 and 1958 plots treated with nitrogen and phosphate yielded the best."

The fertilizer test, which was initiated in 1954 and carried through to 1959, tested nitrogen, phosphate and potash fertilizers on sweet Bing cherries. Fertilizers were applied to paired test trees, and each treatment was replicated five times. The method of applying the fertilizer was by hand under the drip of the trees. All fertilizer was kept three feet from the trunk of the tree. The Bing cherry trees were nineteen years of age at the beginning of the test and had not had previous commercial fertilizer treatments.

There was a significant difference between the check plot and all treatments involving nitrogen for the years 1955, 1956 and 1957 on shoot measurement, according to the report. There was also a high correlation between the tree averages for four years of shoot measurements and pounds of cherries. "This experiment indicates an important relationship of the effects of nitrogen fertilizer on shoot growth and yield of Bing cherries in Western Colorado," the report concludes.

DEMONSTRATIONS

(Continued from page 9)

helps the driver with the work, while the other mixes with farmers and talks about management problems. He finds out what they are growing, the yield made and mentions the benefits they could get from proper fertilization.

"Most of our advertising is of this type," said Mr. Rice. "We circulate among farmers. We talk about good farming methods. Quite often we will take a soil sample during the demonstration, showing farmers the proper way to do it, and answering questions about fertilizer. At these plowing tests we stress the plows or tractor mostly, but just mentioning fertilizer helps lay a foundation for later sales."

Since most plowing demonstrations are given between harvesting and planting seasons, the company has increased winter fertilizer sales. Quite often they book deliveries for spring, but do not require customers to make a down payment.

The company has two large pull-type spreaders which it rents to farmers for $1 per acre. They also work with independent operators who apply fertilizer and insecticides.

When a new spreader is brought out, the firm takes it to the field and invites farmers to witness its performance.

"This works out better than just putting it on display," said Mr. Rice. "Last year our demonstration method helped us sell 20 spreaders at an average price of $250 each."

Insecticides have become big business in this irrigated cotton area, and the Rice & Quillin Implement Co. is getting its share. Though not a heavy profit-maker because of the low selling margin, the firm has managed to make a nice profit.

"Since we work closely with our customers and give them a lot of field help in soil sampling and insect counts, they don't quibble too much about our making a legitimate profit," explained Mr. Rice. "Quite often we go to the field to help them calibrate their sprayers and dusters, all of which is a free service."

One of the busiest parts of the company is a sheet iron building used for a repair shop. A full-time mechanic works on tractors and plows, but also takes care of the fertilizer and insecticide equipment of customers.

The company keeps a large stock of parts and is thus able to keep the machinery moving without any delays. Occasionally some part is rushed to the farmer's field and installed, if he is in a hurry for it.

After putting in the shop, the owners started stocking small items such as sprayers and small farm tools. To sell sprayers, a dealer should have a repair shop, Mr. Rice says. So many things can go wrong with such items, particularly after a couple of seasons' work, that the farmers must either get them repaired or discard them.

"We try to keep equipment running as long as profitable to the owner," Mr. Rice explained. "When it is worn too much, then we try to convince him that a new one is cheaper."

Because farm chemicals went over so well, the partners have also investigated related items. This last year they advertised, made field demonstrations and then sold a sizeable quantity of Johnson grass killer. Other products such as soil sterilants, seed inoculants and livestock and poultry remedies are kept in stock. They induced farmers to try potash for the first time and got some promising results with it.

"It takes a bit of everything to make a success in this business," said Mr. Rice, in conclusion. "We have been in business just five years, but are satisfied with our progress. In addition to Mr. Quillin and myself, we keep from three to five employees.

"At least half our time is spent out on farms working closely with farmers or merely stopping to visit with them. This field work really pays off, because we find out what the problems are. And when you find the problem, the next thing is to work out a solution. If you are fortunate enough to solve it, then you have a chance to get all of the man's business."

Drunk: "I live here."
Cop: "Why don't you go in?"
Drunk: "I lost my key."
Cop: "Then ring the bell."
Drunk: "I rang it an hour ago."
Cop: "Ring it again."
Drunk: "To heck with them; let 'em wait."

★

A South American was describing his country to a North American woman.

"Bull fighting is our most popular sport," he told her.

"Isn't it revolting?" she asked.

"No," he smiled, "that's the second most popular sport."

★

Conversation in a London pub:
"How did Bill die?"
"'E fell through some scaffolding."
"Whatever was 'e doing up there?"
"Being 'anged."

★

A smile costs nothing, but gives much. It enriches those who receive without making poorer those who give. It takes but a moment, but the memory of it sometimes lasts forever. None of us is so rich or mighty that we can get along without it and none of us is so poor but that we cannot be made rich by it.

★

Until a husband can get alimony by crossing his legs and winking at the judge, there's no such thing as equal rights.

★

The man and his wife had been waiting in their stalled car when the highway police drove up.

"Glad you're here," said the husband, stepping out of the car. "Now, I'll acquaint you with the cause of the trouble."

The officer smiled and nodded politely to the woman. "Glad to know you, ma'am," he said.

★

A child's question: "If the Lord gives us our daily bread, and Santa Claus brings the Christmas presents, and the stork brings the babies, then what's the use of having Daddy around?"

★

"Quick, quick!" screamed the small boy, rushing into the drugstore, "My Pop's hanging by his pants leg from a barbed wire fence!"

"What do you need?" asked the druggist. "Is he hurt or do you need help in getting him down?"

"No, no!" shouted the lad. "Just gimme another roll of film for my camera."

what's NEW?

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3-A BOOM — Brow non-corrosive boom designed for roughest usage of commercial operator. Stainless finish.

Heavy duty Trailer Sprayer 230-gallon Plasti-Chem Tank

Ideal for applying corrosive chemicals.

Nurse Tanks in 500 and 1,000 gal. sizes available.

Write to:

the Broyhill COMPANY DAKOTA CITY, NEBRASKA

NEW DEPARTMENT

(Continued from page 9)

something to kill aphids on the roses they have, he says.

No matter which way the customer turns when he enters, the first thing he sees is the department. He may be headed for the seed department on the left, or to the feed department on the right.

The Snipes store was moved several months ago from a downtown location, where there was practically no parking available. In the new spot, there is room for 50 to 100 automobiles.

In three months' time, according to Mr. Snipes, the volume has increased by 33⅓% and this may be attributed to increased parking facilities.

Customers who had not been in to see them in months are dropping by now. They are frankly telling Mr. and Mrs. Snipes the reason they stopped coming to see them at the old location was the lack of parking space.

Getting back to the sale of chemicals, Mrs. Snipes, who does a lot of the selling of this line, says it is largely a case of "suggestive selling."

Outside the store there is a nursery department and Mrs. Snipes does a lot of this selling. Since these items are largely bought by women, she is in a position to suggest insect killers and other items.

Roses in the South are subject to a lot of diseases and insects and women like nice rose beds. South Georgia is known as a rose country. Thomasville, Ga., a city near Bainbridge, every year has a Rose Festival.

So when Mrs. Snipes knows a lady customer goes in for rose cultivation, she knows she has a prospect for chemicals and she points out new products that come on the market and what they are supposed to do.

When the season opens for this line (and in South Georgia there is a long growing season) the Snipes run ads in the weekly newspaper and spots are usually placed on the radio station. The message used is one of reminding the public that now is the time to combat the diseases and insects that invade the area.

Keeping abreast of what is new takes a good portion of the time of both Mr. and Mrs. Snipes. They look at all the literature sent out by the manufacturers so that they can advise customers on what to buy.

"This is another reason why I would like to develop the maintenance service so that one man can spend as much time on this work as possible. He will then be better able to serve," Mr. Snipes said.

SOLE EXPANDS OPERATION

CHICAGO — Sole Chemical Corp., producer of surface active chemicals, announced that as of Feb. 1, 1960, its new and larger headquarters were located at 7740 South Chicago Ave., Chicago 19, Ill.

Solomon Epstein, president, explained that the move expands their manufacturing facilities, as well as improves the coordinating effort of their laboratories, warehousing, and offices. The new location is near the principal east-west-south intersection of the arterial highways into and out of Chicago.

Books on Soils and Soil Management

SOILS AND FERTILIZERS—Fourth Edition

Firman E. Bear

Covers in detail: soil chemicals, important soil elements such as nitrogen, phosphorus, calcium; yield prospects of crop plants, moisture control, soil management; mechanical operations; soil conservation; organic matter maintenance. New facts, accurate figures. 66 illustrations, 420 pages $6.00

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C. E. Millar, Professor Emeritus of Soil Science, Michigan State College

A fundamental treatment of the principles of fertility in the soil, with major emphasis on the plant itself. Relevant aspects of soil chemistry, soil physics, soil microbiology and plant physiology from viewpoint of their influence on plant growth. Each major plant food element and the more important micro-nutrients fully treated with respect to supply in the soil, sources and amounts of additions, losses from the soil, functions in plant growth and plant symptoms of deficiency. Covers all sections, with considerable space to saline soils and soils of southern latitudes $6.75

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The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers..... $8.50

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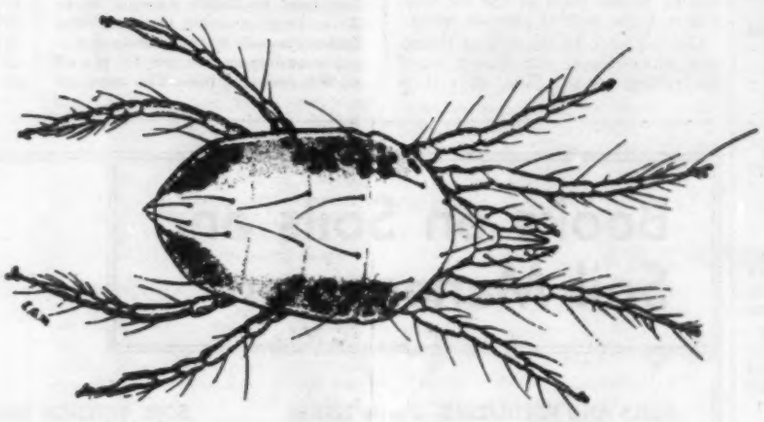
BUG OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

SPIDER MITE



HOW TO IDENTIFY

The adult female spider mite is an eight-legged, pale-yellow or greenish mite, measuring only about 1/60th inch in length. The male is even smaller, being only about 1/80th of an inch long. Two dark spots, composed of the food contents, show through the transparent body wall. The body is oval in outline and sparsely covered with spines.

HABITS OF SPIDER MITE

After mating, female mites begin laying eggs at the rate of from 2 to 6 a day, each depositing a total of 70 or more eggs during her lifetime. Spider eggs are spherical, shiny and extremely minute, attached to the underside of the leaves, usually to the web which the mite spins wherever it goes over the plant. The eggs hatch in from 4 to 5 days into small, crawling young with only three pairs of legs. Female mites molt three times in the course of their growth, the males twice. A complete generation is produced every 20 to 40 days, but these overlap so that all stages of the mites may usually be found at any given time.

DAMAGE DONE BY SPIDER MITE

The mite pierces the leaf of the plant with two sharp slender lances attached to its mouth, and sucks the sap. Not only does the loss of sap damage the plant, but some entomologists believe that the plant is poisoned by the feeding insect. Many vegetable crops are damaged, but most serious injury is sustained by beans, corn, tomato, eggplant, celery and onion crops. Distribution of this pest is world-wide.

CONTROL OF SPIDER MITE

Application of control materials, whether by spraying or dusting, must be thorough in order to cover the underside of leaves. Recommendations for control materials, timing, application practices, dosages, etc., may vary widely in different states and sections of the country. It is therefore difficult here to attempt to give specific suggestions as to what materials should be used or how they should be applied. Local authorities such as county agents, state experiment station entomologists, and manufacturers of the various pesticides should be consulted for specific information. Labels on pesticide containers carry full instructions on use and dosages. Users should always be urged to study labels carefully before applying any insecticide on food or feed crops to avoid the risk of illegal residues at harvest time.

Drawing of Spider Mite courtesy of U.S. Department of Agriculture.

Research in the News

Michigan State University soils scientists are trying to get at the bottom of this question: Which would be the most profitable for Michigan farmers—apply fertilizer in bands or broadcast.

Band applications refer to putting the plant food in select areas in the root zone. Broadcast means working the fertilizer throughout the root zone.

"Many farmers have been interested in broadcast applications of bulk fertilizer because they save on labor costs," remarks Dr. Ray Cook, head of the soil science department. "And many feel that they would like to get out of handling so many bags of fertilizer at planting time as is necessary with band applications.

"But just because it is easier to apply bulk fertilizer, it may not be as efficient in terms of plant response per unit of cost."

The Michigan State scientists are trying to determine just how much more efficient band applications are over broadcast treatments. "We want to know what portion should be applied broadcast and what part should be banded for the greatest return and lowest cost," says Dr. Cook.

A hundred pounds of fertilizer on the average is worth about $4. "If a farmer can get just as good results from 500 lb. applied in band as from 750 lb. broadcast, he can make himself good wages filling hoppers on planters," thinks the researcher.

Scientists are now working on a series of experiments which will give them the answer to the relative effectiveness of band and broadcast fertilizer applications.

●

Ohio orchardists may have trouble with mice again this winter, according to Eldon Banta, Ohio State University Extension horticulturist.

Many orchards suffered heavy damage from mice last winter, and Mr. Banta says there appear to be more mice this year than last. He quotes John R. Beck, U.S. Fish and Wildlife Service district agent in Ohio, as saying that since 1957 conditions have been favorable for a buildup of both meadows and pine mice.

The standard recommendation for control, Mr. Banta says, is zinc phosphide-treated baits. Endrin also may be used. It is more expensive than zinc phosphide, but it usually is more effective against the pine mouse.

Mr. Banta also suggests these cultural measures as aids in mouse control:

1. Keep mulch, weeds or other debris away from the trunks because it gives protection under which mice work on the trees. It also provides nesting cover.
2. Destroy mice runways with a mechanical tree hoe. Hoeing alone will not control mice, but it may reduce the amount of danger.
3. Keep mulch at least 2 ft. from tree trunks. Applying a zinc phosphide bait to the area before putting on the mulch is a precaution.
4. Keep orchard cover mowed short. Do not disturb mouse trail systems for at least a month before spraying or baiting, or effectiveness will be reduced.

●

"Wyoming farmers and ranchers should seriously consider the benefits of applying commercial fertilizer," according to a report on first year results from fertilizer demonstration farms in central Wyoming. The report just released by the University of Wyoming was reviewed by the Western Regional Office of the National Plant Food Institute.

The report states that four demonstration farms showed a profit from fertilization of $2,097 during the one-year period. Fertilizer valued at $3,615 applied in the field, returned $5,000 in increased yields plus a fertility carryover of $1,312.

According to the report, Wyoming soils, climate and topography are characterized by variation. "But generally, Wyoming soils are low in organic matter, high in soluble salts, and limited in supplies of nitrogen and available phosphate," the report's authors state.

Fertilizer recommendations for the four test demonstration farms were based on soil fertility tests and on plans for future cropping. Local research indicated that phosphate was the major commercial fertilizer required by legumes, while grass, hay and small grains gave best response to nitrogen fertilizers. Most Wyoming soils were found low in organic matter and therefore low in total nitrogen. In the tests, phosphate carryover was recognized for heavy application. On applications of above 200 lb. per acre a 75% carryover was assumed, and 67% carryover for 100 lb. per acre applications.

One test field where 200 lb. of available phosphate was applied per acre yielded four tons of alfalfa per acre, while the unfertilized portion yielded only 2.5 tons per acre. This represented a gain of $11.25 per acre from fertilization.

On another farm, fertilization with nitrogen and phosphate resulted in a return above cost on oats of $14.55 per acre, and a return on wheat of $15.75 per acre.

Summarizing their report the authors commented, "Fertilizer use is increasing rapidly in Wyoming, but the bulk of the material is being used on high value crops such as sugar beets and potatoes. Few farmers are fertilizing forage and grain crops, and those who do often use rates far below those which would give maximum returns."

FAMILY ENTERPRISE—Barney Winger, seated, with his four sons (left to right) Clifford, Walter, Lloyd and Henry, owners of Winger Manufacturing Co., Ottumwa, Iowa, have announced their purchase of the "Bulkmaster" line of self-unloading bulk materials truck bodies and trailers from Dorsey Trailers, Elba, Ala.

George F. Ford

L. R. Lyons

Iowa Firm Buys Truck Body Line

OTTUMWA, IOWA—The Winger Manufacturing Co., Ottumwa, Iowa, has purchased the Bulkmaster line of self-unloading bulk materials truck bodies and trailers from Dorsey Trailers of Elba, Alabama.

Walter Winger, general manager, indicated his company has begun operations in Ottumwa. Self-unloading bodies and trailers are being produced to serve all segments of industry, including the poultry and livestock industry, as well as producers of dry bulk materials, lime, fertilizers, etc.

George F. Ford, former Dorsey sales manager of Bulkmaster division, and L. R. "Doc" Lyons, former Dorsey chief engineer of Bulkmaster division, will continue in these capacities with the Winger organization. Mr. Ford will be assisted in sales by Kenneth Rohm. The present distributors, also, will continue to play an important part in the proper handling of services and sales, the company says.

For the past 20 years Winger has been well-known as a custom fabricator of material handling equipment in carbon steel, stainless steel and aluminum, producing a large number of items for meat packers, materials handling and chemical industries.

The firm is owned and operated by the Winger family, including Barney Winger and his four sons, Lloyd, Henry, Walter and Clifford.

EXPANSION ANNOUNCED

NASHVILLE, GA.—An expansion into the wholesale distribution field in fertilizers has been announced by L. R. Stalling, owner of Stallings Seed and Feed Co. The company will distribute fertilizer to retailers over several counties in south Georgia, and has moved into a larger building in the outskirts of Nashville. The wholesale operation will be in addition to the retail trade.

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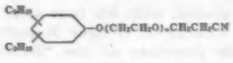
PATENTS and TRADEMARKS

2,920,995

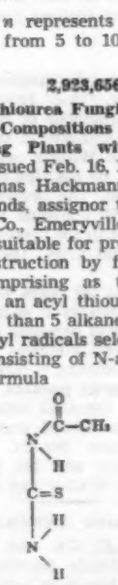
Fungicides for Chlorophyllaceous Plants. Patent issued Jan. 12, 1960, to Earl P. Williams, Pen Argyl, Pa., and Raymond L. Mayhew, Phillipsburg, N.J., assignors to General Aniline & Film Corp. The process of controlling fungi attacking chlorophyllaceous plants which comprises applying to said plants a fungicidal amount of dinonylphenoxypolyethoxypropionitrile having the following general formula:



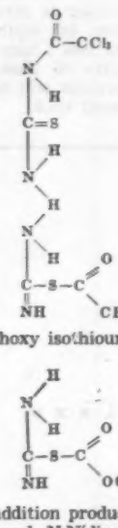
wherein n represents a positive integer of from 5 to 10.

2,923,656

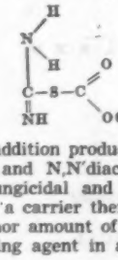
Acyl Thiourea Fungicidal and Bactericidal Compositions and Method of Protecting Plants with the Same. Patent issued Feb. 16, 1960, to Johannes Thomas Hackmann, Amsterdam, Netherlands, assignor to Shell Development Co., Emeryville, Cal. A composition suitable for protecting plants from destruction by fungi and bacteria comprising as the active ingredient, an acyl thiourea containing not more than 5 alkane carbon atoms in the acyl radicals selected from the group consisting of N-acetyl thiourea of the formula



trichloroacetyl thiourea of the formula



S-carboethoxy isothiourea



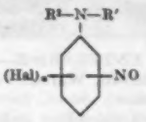
and the addition product of N-acetyl thiourea and N,N'diacetyl thiourea, and a fungicidal and bacterial adjuvant as a carrier therefor comprising a minor amount of a surface active wetting agent in aqueous medium.

2,926,078

Method for the Control of the Growth of Vegetation. Patent issued Feb. 23, 1960, to Melvin J. Josephs, Midland, Mich. A method for the selective suppression of the germinant seeds and emerging seedlings of undesirable narrow leaved and broad leaved weeds in soil planted with corn which comprises distributing 2,-3,6-trichlorobenzyl alcohol in such soil in the amount of from 2 to 30 parts by weight per million parts by weight of soil.

2,923,637

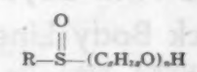
Method and Composition for Combating Fungi. Patent issued Feb. 16, 1960, to Nicolaas Dost and Rinke Berkenbosch, Amsterdam, Netherlands, assignors to Shell Development Co., Emeryville, Cal. The method of combatting fungi which comprises subjecting the fungi to the action of a fungitoxic amount of a metal salt of an ar-nitrosoaniline of the formula



wherein R' and R^3 each represents a member of the group consisting of hydrogen, and lower alkyl, cyclohexyl, phenyl, and halo-substituted phenyl groups, Hal represents halogen and n is an integer from 0 to 1.

2,926,118

High Molecular Weight Sulfoxide Insect Repellents and Methods of Repelling Insects. Patent issued Feb. 23, 1960, to John E. Mahan, Bartlesville, Okla., assignor to Phillips Petroleum Co. An insect repellent composition comprising 25 weight percent of at least one compound having the following structural characteristics



wherein R is a radical selected from the group consisting of alkyl, aryl, alkaryl, aralkyl and cycloalkyl radicals containing from 4 to 16 carbon atoms, x is an integer from 2 to 5, and n is an integer from 1 to 10, 5 weight percent alkylated aryl polyether alcohol, and 70 percent finely-divided attapulgite.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 28.1 to 28.5.) As provided by Section 31 of the Act, a fee of $25 must accompany each notice of opposition.

Chevron, in capital letters, for fertilizers. Filed June 1, 1959, by Standard Oil Co. of California, San Francisco. First use April 21, 1959.

Fish-ilizer, in capital letters with the hyphen taking the form of a fish, for plant fertilizer in tablet form. Filed Aug. 18, 1959, by Parks-Barnes, Inc., Hermosa Beach, Cal. First use July 28, 1959.

Mira-Gard, in capital letters, for insecticide-fungicide-miticide for use on flowers, fruits and vegetables. Filed Aug. 10, 1959, by Stern's Nurseries, Inc., Geneva, N.Y. First use June 20, 1959.

Design, drawing of flower box with flowers and words Perm-A-Mulch in capital letters enscribed, for fertilizer and soil conditioner. Filed Aug. 20, 1959, by Smith & Moore Sawdust Co., Spokane, Wash.

Liquid Gyp, in capital letters, for soil conditioners. Filed Aug. 24, 1959, by Knowles Organic Specialties, Inc., d.b.a. Procon Industries, Mount Eden, Cal. First use June, 1955.

ANNUAL VIRGINIA SALES

RICHMOND, VA.—Annual sales of fertilizer in Virginia for 1959 amounted to 760,142 tons, reported the division of chemistry and foods, Virginia Department of Agriculture. This compared with 709,951 tons sold during 1958.

COTTON

(Continued from page 1)

tion, such as past practices and crops, soil and plant tests, water quantity and quality, and production goals," he said.

Despite rapidly increasing production costs, fertilizer has remained one of the best buys for the cotton farmer, Mr. Bahme indicated.

"Because cotton growers are progressive, cotton yields per acre have averaged 52% higher over the past 10 years," he said. "Fertilizer accounts for only three to five per cent of the total production inputs over the past 10 years.

"Cotton growers have recognized that production costs are about equal for a one-bale crop as for a four-bale crop, and that proper fertilization will generally increase their yields and profits more rapidly than their cost of fertilizer and other materials," Mr. Bahme said.

He also pointed out that Western cotton farmers profit the most from fertilizer when it is combined with good use of irrigation water. "As water costs get higher," he said, "many cotton growers will find additional profit from extra dollars spent for fertilizer to insure the greatest return from irrigation."

Layby herbicides are a big step forward in controlling weeds in cotton, P. J. Lyerly, agronomist at the Texas Agricultural Experiment Station, El Paso, told the conference. He outlined specific recommendations for using the herbicides, but cautioned that this method of weed control is not effective under all conditions.

"It's a specialized and precision operation," he said. "The herbicides can be of considerable value under many conditions but certainly they will not fit all situations."

Layby herbicides are the product of the necessity for cotton farmers to become increasingly efficient in order to survive, he observed. Cotton producers who do not look for ways to increase output or who try to "hold the status quo are being pushed out of business."

Since layby herbicides are potentially dangerous to cotton plants, Mr. Lyerly said, using a rate and technique of application which will kill the weeds without injuring the cotton is important. "Generally the larger the plant the more chemical is needed to injure it," he said, "thus we let the cotton plants become older and larger before treating, but treat the weeds while they are quite small and susceptible to the herbicide."

Mr. Lyerly listed these general points to consider when using a layby herbicide: (1) apply after cotton is 12 inches high; (2) provide uniform bed profile, free of clods, with gradual slope to center; (3) have field free of all grass and weeds at time of application; (4) select suitable rate of material; (5) take necessary steps to secure correct rate of application; (6) make slurry of herbicide before adding to tank; (7) use 20-30 gallons of spray solution per acre; (8) make sure herbicide is in full suspension before spraying; (9) obtain complete ground coverage and minimum leaf coverage; (10) do not continue spraying while stopped or moving slowly in field; (11) irrigate within a few days after application to soak herbicide in soil; and (12) do not cultivate after application.

Effective application of defoliants can be a significant aid in maintaining the high qualities that have been bred into cotton, Audy J. Bell, agronomist with the J. G. Boswell Co., Corcoran, Cal., told the cotton producers. He declared that defoliants, applied at the proper time, are important in efforts to preserve cotton's quality.

"Defoliation can be used to reduce boll rot in rank cotton," he said, "a problem that can damage the tensile strength severely if allowed to go unchecked."

Defoliation also enhances conditions for timely machine harvesting of the cotton crop so it can be ginned before inclement weather sets in and with a minimum of heat, according to Mr. Bell.

"Good judgment is very important when applying defoliants," he said. "We should keep in mind that quality as well as yield can be affected adversely if a defoliant is applied before the bolls we expect to harvest have had enough time to mature."

Producers should determine the best time for defoliation, keeping in mind that they want to minimize the possibility of harming the quality of the fiber by too early defoliation yet facilitate harvesting of the fiber before adverse weather develops, Mr. Bell said.

"In other words," he concluded, "we should not defoliate too early or too late.

"We can summarize our present position by the facts that we have been given cotton plants that are resistant to disease; we have planted them close together; we have fertilized them intensively to produce high yields of cotton with a correspondingly increased number of leaves.

"These factors, coupled with the necessity of harvesting a high quality product by machine, intensify our problems of getting a good defoliation under our present farming practices. This simply means then that we must seek better methods of defoliating our present well-bred cotton."

The greatest problem in counteracting some $3,000,000 worth of cotton insect damage last year in New Mexico, is getting cotton producers to realize the value of investing in insect control when it is necessary, it was emphasized by John J. Durkin, extension entomologist at the University of New Mexico, University Park. He was one of a panel of entomologists from Arizona and California discussing insect control problems and recommendations for 1960.

"We must make the cotton producer aware of the insect problem that he must overcome," Mr. Durkin said. "Then we have to show him that insects can be controlled and that chemical insect control, when necessary, pays dividends."

The entomologist said the weakest link in the chain of factors making up an effective cotton insect control program is application of pesticides. "We must insure economic control with recommended chemicals by emphasizing the importance of proper application as well as correct timing of application of the correct amount of a recommended chemical," he said.

Growing a high-quality cotton crop, according to Mr. Durkin, involves a great many production practices that are all dependent on the others for success. "Insect control is one of the essential parts or practices necessary in producing a cotton crop," he said. "Since each operation involved in growing a cotton crop complements and enhances the others, then we might say that the money invested in each operation insures or increases the net reurn on the money invested in all other practices.

"Our aim in New Mexico is to get our cotton farmers interested in insect control so they will evaluate research results and insect control demonstrations in their area and eventually try to adopt sound insect control practices on their farms."

The economics of cotton production forces farmers to concentrate on lower costs rather than on high quality, the conference was told by Jim Bowden of Tornillo, Texas, cotton producer.

Mr. Bowden said proper planning

and efficiency in production were all important to the cotton farmer. "Raising a cotton crop is a blending of many operations along with close supervision and management, which combine to make or break us," Mr. Bowden said in outlining his operation near El Paso.

Major steps listed in his program include: (1) deep plowing-mixing of the soils and leveling; (2) prior planning by the farmer for accommodation of machines, pickers, etc.; (3) proper preparation of soil for planting; (4) the planting operation itself —using the best seed available; (5) cultivation—application of weed control chemicals, fertilizer, and insecticides; (6) defoliation; and (7) machine harvesting.

"We must maintain the soil in the best manner we know how," Mr. Bowden said.

Other speakers discussed expansion of cotton markets both in the U.S. and abroad; maintaining and improving the quality of cotton in keeping with the needs of cotton mills; and the necessity of further mechanization in cotton production.

On the latter subject, John H. Miller, U.S. Cotton Field Station, Shafter, Cal., said that the labor supply problem becomes more acute each year, and hoe-labor is still a major means of weed control in cotton. He said that a number of herbicidal products have proved effective, but some problems persist.

Much of the current research in California, he said, is being directed toward improved practices for early season weed control. This work includes pre-emergence, post-emergence and post-emergence-soil incorporated herbicide treatments.

Panogen Names New North Central Salesman

CHICAGO—Gerald (Jerry) Zirbel has been named sales representative by Panogen Co. division of Morton Chemical Co., Chicago. He will contact distributors and dealers in the company's north central region, of which Lin Mercil is regional manager.

Announcement was made by Raymond P. Seven, assistant general manager of the company.

Mr. Zirbel comes to Panogen from Peavey Feed Mills, Minneapolis. He will headquarter at Detroit Lakes, Minn., and travel in Minnesota and North Dakota.

Stauffer Announces Construction Plans

LOS ANGELES—Stauffer Chemical Co. announced the start of construction of a $1.5 million office building on the corner of 5th St. and Virgil Ave. here.

The building will be a four story, reinforced concrete structure with a penthouse employees' lounge.

Carter Co. Contractors & Developers are in charge of construction, which will house the southern California headquarters and sales offices of Stauffer.

Named Pennsalt Salesman

TACOMA, WASH. — Appointment of Kenneth L. Houston as technical sales representative, agricultural chemicals, was announced recently by Donald E. Hope, northern manager for Pennsalt Chemicals Corp.'s Agricultural Chemicals Division.

Mr. Houston, who obtained his master's degree in agriculture at Iowa State University, joins Pennsalt with sales experience in pesticides and feed supplements in the midwestern regions.

Initial assignment is to be with Pennsalt's northern agricultural chemicals group and to service the lower Midwest territory, including Missouri and Kansas.

This new agricultural chemicals office is to be established in St. Louis, Mo.

Reader Views

To the Editor:

Again, I just want to say thank you for your editorial in the Feb. 22 issue. This is good publicity and we need, as I have stated before, more and more of this type of exposé on how silly some of the laws that we have are being interpreted.—Jack V. Vernon, Vice President, Food Machinery and Chemical Corp., New York.

To the Editor:

As I indicated to the board of directors, (of the California Fertilizer Assn.) your February 15, 1960 Production issue was outstanding in its coverage of developments within the fertilizer industry.

We are generally prone to blast away at the hapless editor when he displeases us, but seldom do we take pen or typewriter in hand and let him know when he pleases us. It is a pleasure to advise you that this was an especially good issue of your excellent magazine.—Sidney H. Bierly, general manager, California Fertilizer Assn., Sacramento, Cal.

Collier Announces Manager Appointment

LOS ANGELES — Collier Carbon and Chemical Corp. announced the appointment of Edgar F. Whitmore as manager of industrial chemical sales.

Formerly district sales manager of shippers' car line division of ACF Industries, Mr. Whitmore has been associated with chemical sales for 20 years. He is a chemical engineering graduate of Lehigh University, and received his master's degree in business administration from Harvard business school.

CORN CLUB FORMED

MILFORD, ILL.—A 10,000 Bushel Corn Club is being organized by Crow's Hybrid Corn Co., according to A. F. Crow, president. Its purpose is to give recognition to farmers doing an outstanding job of growing corn. Membership will be open to any farmer producing at least 10,000 bu. of corn on 100 acres or less with any variety (or varieties) of Crow's hybrid corn. The first members will be announced following the 1960 harvest.

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Molybdenum Benefits Noted in Experiments

NEW YORK—A recently completed series of greenhouse experiments conducted by Cornell University's department of agronomy has revealed that birdsfoot trefoil and ladino clover are markedly benefited by soil treatments with molybdenum compounds. Alfalfa was benefited to a limited degree by soil treatment with molybdenum.

The experiments were run on several samples of Mardin silt loam soil and showed that small additions of molybdenum (⅛ lb. sodium molybdate per acre) make it possible to obtain good yields of birdsfoot trefoil at lower levels of liming than if molybdenum is not applied.

Used alone, the molybdenum increased yields of birdsfoot trefoil by as much as 130% over untreated soils. Yields from soils limed at a one-ton per acre rate showed an increase of 40% when molybdenum compounds were also used. When liming reached the two-ton rate additional molybdenum no longer had an appreciable effect. In the tests, molybdenum compounds were applied both as soil sprays and dusts.

GRANT ACCEPTED

MANHATTAN, KANSAS—A $26,000 grant from the Rockefeller Foundation for two years of basic research on biochemical and physiological processes that occur in stored grain has been accepted by Kansas State University, announced Glenn H. Beck, director of the Kansas Agricultural Experiment Station. Pekko Linko of the flour and feed milling industries department will have charge of the research. By determining biochemical and physiological processes that occur in stored grain, it may be possible to remedy what is called "sick wheat" or germ-damaged wheat in the flour and feed trade.

WISCONSIN

(Continued from page 1)

suffered by agriculture and by independent scientific research organizations."

Members of the special committee include the following distinguished scientists, representatives of the medical profession, and agricultural experts: Dr. Conrad A. Elvehjem, president of the University of Wisconsin, chairman; Dr. J. Z. Bowers, dean of the medical school of the University of Wisconsin, vice chairman; Dr. Robert Parkin, assistant to the dean of the medical school of the University of Wisconsin, secretary; Dr. James Miller, professor of Oncology, McCardle Research Institute of the University of Wisconsin; Dr. William B. Hildebrand, president of the Wisconsin State Medical Society; Dr. Carl N. Neupert, Wisconsin State health officer; Dr. Henry T. Scott, director of biological laboratories of the Wisconsin Alumni Research Foundation; Dr. Aaron Ihde, professor of chemistry and member of the Wisconsin Food Standards Advisory Committee; Prof. H. L. Ahlgren, associate director of the agricultural extension division of the University of Wisconsin; Prof. R. J. Muckenhirn, assistant director of the agricultural experiment stations of the University of Wisconsin; and Don McDowell, director of the Wisconsin State Department of Agriculture.

CONSTRUCTION

(Continued from page 1)

tag of approximately $1.344 billion were completed in 1959. This brings total construction costs for the three-year survey period (1959-61) to an estimated $3.002 billion.

In commenting on the survey, Gen. John E. Hull, USA (Ret.), MCA president, said: "The resurgence in chemical construction reflects not only the continuing confidence in the future by chemical managements, but the increasing use and demand for chemical products. Not only are tonnage requirements increasing, but the number of chemical products and variety of uses is growing steadily." The report added that record highs were established this year in the survey categories of planned construction, total projects, companies participating, and communities involved. "This would seem to indicate a resurgence of construction activity from the downswing of the recession and a continuing tendency away from plant-site concentration," the report says.

Leading in total expenditures for construction is the State of Texas with a figure of $792.5 million for the three survey divisions of planned construction, under construction and completed (1959) construction. In second place again is Louisiana with $370.9 million. Tennessee stepped ahead of California for third place, and the remainder of the top ten are Ohio, West Virginia, Kentucky, Michigan and Illinois.

PRODUCTION

(Continued from page 1)

was 270,886 tons for last December, which was more than the previous month and the same month in 1958.

December, 1959 output of synthetic ammonium sulfate was 13,494 tons more than November and 18,821 tons more than December, 1958.

Production of nitrogen solution for the period was 83,117 tons, substantially more than the two comparable periods.

Phosphoric acid production during December of 158,247 tons was slightly higher than the November and the preceding December totals.

Output of sulfuric acid was 1,528,271 tons, compared with 1,437,902 tons for November and 1,494,820 tons for December, 1958.

DEADLINE

(Continued from page 1)

Secretary of Health, Education and Welfare.

This does not mean that enforcement of the FDA act will be slowed, but it may mean that there will be a return to more authority over FDA activities by the food and drug commissioner. Some have observed that in recent months some of the commissioner's authority seemed to have been superseded by the activity of his boss as the secretary grabbed sensationalized publicity as in the case of cranberries and caponettes.

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Louisville Office: 4th and Broadway St., Louisville, Ky., Phone JUniper 3-7634
Atlanta Office: 3121 Maple Drive, N.E., Phone CEdar 3-3227
Los Angeles Office: 110 S. Euclid, Pasadena, Phone MUrray 1-0278

Crag Names New Virginia Representative

NEW YORK—Richard T. Dotzenrod has been appointed as sales representative for Crag Agricultural Chemicals, according to R. H. Wellman, manager of Crag Agricultural Chemicals, Union Carbide Corp.

R. T. Dotzenrod

Mr. Dotzenrod holds a bachelor of science and a master of science degree in horticulture from the University of Arizona. Since joining the Crag Agricultural Chemicals staff in 1959, he has participated in market development activities for Union Carbide's new Sevin insecticide.

In his new capacity as sales representative, Mr. Dotzenrod will make his headquarters in Winchester, Va., and will be responsible for marketing of Crag products in the Shenandoah Valley and Mid-Atlantic area.

Mr. Dotzenrod replaces E. M. Miller who resigned to accept a position as sales representative for Miller Chemical Corp. of Charles Town, W. Va.

New Site for Croplife's Eastern Sales Office

NEW YORK — Croplife's Eastern States sales office here has moved to a new location as of March 1. The new address is 52 Vanderbilt Ave., Room 1101, New York 17, N.Y. The telephone number is ORegon 9-2490. The office was formerly situated on Fifth Ave.

Paul L. Dittemore is manager and Archy S. Booker, Jr. and James W. Miller, advertising sales representatives.

SHEATH NEMATODE FILM

BERKELEY, CAL.—A motion picture believed to be unique in its field has been produced by the University of California, Riverside, and distributed to many parts of the world. Entitled "The Sheath Nematode," the 10-minute color film is the first to show the feeding of nematodes (tiny soil worms) on plant roots, said S. A. Sher, vice chairman of the department of plant nematology at Riverside.

GOLD MEDAL AWARD—Canner Packer magazine's Gold Medal Award for an "outstanding" insecticide, is presented to John A. Rodda (right), general manager of Fairfield Chemicals, Food Machinery & Chemical Corp., producer of non-toxic Pyrenone insecticide bases. Thomas Vought, representing Canner Packer, makes the presentation. Fairfield's Pyrenone was one of 50 products chosen by the magazine's panel of judges to receive the Gold Medal Award "for creative progress in processing foods." According to the citation, the Canner Packer Gold Medal is "Awarded for outstanding innovations or improvements in equipment or supplies used by processors of food."

Chas. H. Lilly Names Three Vice Presidents

SEATTLE, WASH.—Three vice president elections have been announced by the board of directors of the Chas. H. Lilly Co. and the Portland Seed Co., corporate affiliates.

Fenn Emerson, Ernest E. White and Mal Tellvik were the vice presidents named.

Mr. Emerson was formerly manager of the anhydrous ammonia fertilizer distribution department, Eastern car lot seed sales and export seed sales.

Mr. White is the present general manager of the Lilly Co.

Mr. Tellvik, until his election to the vice presidency, was in charge of western Washington credit, field seed operations and general purchasing.

Connecticut Fertilizer Report

NEW HAVEN, CONN.—Analysis of fertilizers on sale in Connecticut last year shows that 89% of all plant-food guaranties made by manufacturers were met, Connecticut Agricultural Experiment Station chemists report. H. J. Fisher, chief chemist, says that 86% of all guaranties for nitrogen, phosphoric acid, and potash in mixed fertilizers were substantially met or exceeded. Ninety-three per cent of all guaranties made were met on fertilizers sold only in packages of 10 lb. or less.

Dr. Fisher reports that fertilizer tonnage sold in Connecticut in the year ending June 30, 1959 (excluding small-package sales) was 81,440 tons, an increase of 5% compared with the preceding year. Mixed fertilizer tonnage was 55,893, up about 3%.

Davison Introduces Product

BALTIMORE — Introduction of granulated diammonium phosphate as an addition to the Davison line of agricultural chemicals was announced by W. R. Grace & Co., Davison Chemical Division. The formula is 16-48-0, 16 units of nitrogen and 48 units of available phosphoric acid.

The exact 1-3-0 ratio, the company points out, simplifies mixing formulas, while contributing to the high analysis character of the mixed product. Granulation also simplifies mixing and provides better application qualities.

NEW DUSTING FIRM

CASA GRANDE, ARIZ. — Virgil Koenig is president of the new firm of Koenig & Martin Dusters, Inc., at the airport here, which will handle aircraft for dusting purposes.

WEED KILLER DISCUSSED

SACRAMENTO — A new product for the control of submersed water weeds that choke irrigation canals and ponds was discussed here before a meeting of the California Weed Control Conference.

The product, Aqualin Herbicide, was successfully tested by Shell Chemical Co. in irrigated areas of the western U.S. and has demonstrated it may become a weapon in the war against weeds.

Information on the product was presented to the conference in a technical paper by Dr. Rene Blondeau, staff member of Shell Development Co.'s agricultural research center at Modesto, Cal.

Dr. Blondeau stated that the ever-increasing importance of water to Western agriculture makes it vital that weeds in irrigation systems be controlled.

Aqualin Herbicide is a water-soluble liquid that is added to canal water with the use of specially designed equipment. The wave of herbicide-treated water thus formed is carried downstream, killing weeds as it moves.

Books on Pesticides

THE GARDENER'S BUG BOOK (1956)

Dr. Cynthia Westcott

The Complete Handbook of Garden Pests and their control. Information, scientifically accurate but easy to read on 1,100 insects, mites and other animal pests that attack trees, shrubs, vines, lawns, flowers, fruits and vegetables in home gardens. Illustrations in full color. Control measures combine the latest in chemical developments with time-honored cultural measures. Helpful to all who serve the general public and to truck farmers and fruit gardeners. 579 pages, cloth bound $7.50

HANDBOOK OF AGRICULTURAL CHEMICALS —Second Edition

Lester W. Hanna, Agricultural Enterprises, Forest Grove, Ore.

As the title implies, this book contains broad information and tables on not only the chemical products themselves, but also on toxicity, residues, registration, terminology and emergency treatments. A fold-out chart gives compatibility data on numerous materials for formulators. Information on fertilizers includes soil elements, trace minerals, and application techniques. Descriptive material is also presented on fumigants, fungicides, herbicides, systemics, growth modifiers, livestock chemicals, rodenticides, and antibiotics. Information on materials and techniques is written fully with illustrations and tables. 490 pages..... $5.95

INSECT PESTS OF FARM, GARDEN and ORCHARD—Fifth Edition (1956)

Leonard M. Peairs and Ralph H. Davidson

A standard text for 44 years. Includes insects affecting grasses, grains, cotton, legumes, vegetables, flowers, fruits, stored products, household goods and domestic animals. Contains a new chapter on insecticide formulations, spray mixtures, application equipment, etc. Material on forty new pest species added, including drastic changes in the illustration. 661 pages $8.50

DDT and NEWER PERSISTENT INSECTICIDES

T. F. West and G. A. Campbell

The first and major part of book is devoted to the physical and chemical properties, manufacture, formulation and applications of DDT. The second part deals with other chlorinated hydrocarbons whose insecticidal properties have been discovered recently and compares these new insecticides with DDT. The preparation of aqueous suspensions, solutions, emulsions, and dusts containing DDT, the compatability of DDT with other insecticides, fungicides and additions are covered in detail. Contains dozens of tables on the solubility of DDT in various solvents, the catalytic activity of accessory substances in the presence of DDT, analogues of DDT, the comparative toxicity, hydrolysis and solubility of DDT analogues, the toxicity of DDT for almost all important insects, etc. Many illustrations $8.50

PESTS OF STORED GRAIN AND GRAIN PRODUCTS

Richard T. Cotton, Stored Product Insect Section, U.S. Department of Agriculture, Washington, D.C.

Dr. Cotton's valuable book is full of practical up-to-date information on the problems of insect and rodent contamination. Some of the main topics covered are: methods of detecting contamination in cereal from rodents, birds and insects; prevention and control of insect infestation in grain; new methods of storage; methods of sanitation in grain storages and processing plants; the latest information on fumigation; heat sterilization; and protection of stored seed. This book is concise, readable, completely indexed and includes over 100 figures and illustrations. 306 pages, 8½x5½", photo offset, illustrated, cloth bound.... $4.00

METHODS OF TESTING CHEMICALS ON INSECTS—Vol. I

Harold H. Shepard, chief, Agricultural Chemicals Staff, Commodity Stabilization Service, U.S. Department of Agriculture, Washington, D.C.

This is Vol. I of a proposed three-volume study. It describes methods of studying the effects of chemicals on the physiology of insects. Also covered are general techniques for applying chemicals to insects. It includes laboratory screening methods for determining the killing efficiency of insecticidal sprays, dusts and fumigants. Its 14 chapters are authored by prominent entomologists from USDA and State Experiment Stations. 355 pages; 8½x5½" photo-offset, cloth bound $5.00

THE CHEMISTRY AND ACTION OF INSECTICIDES

Harold H. Shepard, Entomologist, U.S. Department of Agriculture, formerly Associate Professor of Insect Toxicology, Cornell University.

Treats the chemistry of insecticides, the history of their use, their commercial importance here and abroad, the nature of the major uses, the influence of environment on effectiveness. Materials are arranged according to their chemical relationships. Two chapters relating to organic compounds largely new as insecticides. Illustrative data in form of tables, and a convenient appendix of equivalents arranged for practical use in the field. 584 pages $10.50

ADVANCES IN PEST CONTROL RESEARCH—Vol. 2

Edited by R. L. Metcalf, University of California, Citrus Experiment Station, Riverside, Cal.

This book, an annual series, treats pest control as a distinct discipline, discussing chemical, physical and biological methods from the common viewpoint of the basic principles involved and applying them to the control of weeds, fungi, bacteria, insects—all organisms which compete with man for his food supply, damage his possessions, or attack his person. Each annual volume contains chapters contributed by outstanding scientists having intimate knowledge of various pertinent topics within the field, presenting not only comprehensive reviews of recent advances but also critical evaluation of new developments and concepts. This volume continues the same plan which won immediate acceptance for the series. In eight chapters, a group of experts present and interpret recent advances in subjects ranging from the innate toxicity of fungicides to isotope dilution techniques and the spread of insecticide resistance, 1958; 434 pages, 110 illustrations, 43 tables $12.50

INSECT, FUNGUS AND WEED CONTROL

Dr. E. R. de Ong

The information is grouped according to field of application rather than to chemical composition or nomenclature. Chapters on insecticide label, seed disinfectants, herbicides, forest insects and diseases, livestock insects, and the pests found in household and industry. Fumigation of warehouses, residual sprays and preservatives for fruits, vegetables and wood products are covered. An up-to-date guide on pest control with the needs of operators, agricultural and structural specialists carefully considered. Shippers and warehouse personnel will find the book useful $10.00

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A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

Pesticide Use Gives 8-1 Returns in Colorado

NEWS AND COMMENT from various locations in the West form an interesting pattern for the pesticide trade to think about. From Ft. Collins, Colo., comes a report concerning insect activity in that state, the economic losses caused by depredations of the pests and the cost of control measures to reduce the amount of their damage.

Although insect problems in Colorado were relatively light in 1959, the Colorado State University reports, farmers and ranchers still spent almost $3 million on control measures. The control effort was concentrated chiefly on fruit and row crops, with savings as a result of the control program estimated at just under $26 million. This means an over-all return of about 8 to 1.

Actually, the 8-1 return is just an average of savings gained from pesticide applications on many crops. In specific instances, the return was much more. For example:

> **An expenditure of $177,840 for insect control on sugar beets gave an estimated saving of $4,265,160 for a return of about 24 to 1. Applications on alfalfa, on the other hand, brought a return of only 1½ to 1. Cost-return ratios for other crops fell generally within these limits.**

The $26 million savings came on some 700,000 acres on which control measures were taken. In all, almost 2,000,000 acres were reported as infested by various insect pests including the two-spotted spider mite, alfalfa weevil, grasshoppers, wheat curl mite and codling moth.

Chemicals and Cotton

"There is no doubt that chemical defoliants and desiccants are a necessary part of modern cotton production. It is estimated that about 40% of the beltwide cotton acreage was treated with harvest-aid chemicals in 1958. During the last harvest season in Texas, this figure approached 50% or around 3 million acres treated.

"From 1958 to 1959, spindle pickers showed about an 80% increase in the state and strippers about a 10% increase. The benefits to the growers in savings in the cost of harvesting by combining pre-harvest chemical treatment with mechanical harvesting over hand harvesting are well-established. These points refute the claim of some that we should abolish the use of all chemicals on cotton."—Dr. Wayne C. Hall, Texas A&M College.

Growers Say Chemicals Are Indispensable

FROM THE STATE of Washington comes a report of concern by growers over the current Food and Drug threats against use of many pesticides. At a recent farm forum meeting at Spokane, one spokesman, a seed grower and merchant, commented on the current FDA situation as follows:

"Our grass seed farming is practically 100% dependent on chemicals—fertilizers, herbicides, insecticides, fungicides and desiccants—all essential to production.

> **"Fortunately, grass seed is not edible as human food and therefore is not subject to the Miller Act and the Delaney Amendment," he said. "But we and other growers are using many of the very same chemicals now limited in use by the provisions of the Delaney Amendment and enforced by FDA." He went on to say that the zero tolerance is of most concern to agriculture, since it is neither defined nor limited.**

Because there can be practically no limit to the "smallness" of detectable residues, this sets up a difficult situation. Today's analytical methods which indicate no trace of residues may be superseded by more sensitive techniques which might show an extremely slight trace. What then? No matter how infinitesimal the amount, it is still not "zero" under the terms of the Delaney Amendment.

Pressure from users of pesticides . . . the people who can't afford to be without chemical protection from insects, plant disease and weeds—is likely to play an important part in future decisions on how strictly to apply the provisions of the anti-cancer legislation embodied in the Delaney Amendment.

When the voices of farmers are heard rising in protest, sensitive ears in Washington will be there to listen.

Fire Ant Controversy Rises Again Over Plane Use

THE FIRE ANT hassle continues to smoulder in some areas and occasionally the fire ants breakout into a blaze. The City of Columbus, Ga., has refused to allow the U.S. Department of Agriculture to apply pesticides from low-flying planes over the city. The city commission said the planes could not come closer to the ground than 1,000 ft., whereas the maximum effective height is around 200 ft. The city based its refusal on fear of danger to life and property.

Columbus is reported to be the first city in the area to refuse permission to low-flying planes on fire-ant eradication errands. Cities of Bainbridge, Cairo and Fitzgerald have all been treated.

Jack Gilchrist, Georgia Department of Agriculture, said that the fire ants left untreated in areas like Columbus, will spread into other communities.

Many in the trade have voiced the hope that prejudice against the use of toxicants to control the fire ant might die down and a common-sense attitude toward controlling this pest might prevail. Apparently, that time has not arrived yet.

Wanted: More Appreciation For U.S. Farmers

AN ACCOLADE to farmers, pointing out their great industrial importance beyond their obvious production of food, was made by L. Y. Ballentine, North Carolina Commissioner of Agriculture at the recent meeting of the Soil Science Society of that state. He pointed out that farmers, comprising only 12% of the population, produce 65% of the raw materials for industry; and that America owes no small part of its mushrooming industrial development to the fact that increased productivity per man hour on the farm released to industry much of its best labor force.

"The adjustment of the family farm and the farm family to the age of technology has kept America the best fed and clothed nation in the world, while the producer of this wealth has not shared commensurately with the prosperity of the rest of the nation. It seems never to occur to the consumer that the high cost of food reflects his own demands for more and more processing and services, and not a comparably higher income for the farmer," Mr. Ballentine declared.

"The consumer expects agriculture to exist and thrive as the only unsupported segment of an otherwise supported economy, because it has been carefully concealed from him that industry and non-farm labor are receiving government protection, subsidies and supports. In short, America's farmers—the world's most efficient producers for humanity's most basic material needs—are, 'without honor in their own country.'"

He stated that groups interested in agriculture must "tell America the true story of agriculture—its achievements, its problems and its importance."

Croplife's Home Office

Croplife®

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop area) basis with a mailing schedule which covers consecutively, one each week, three geographic regions (South, Midwest and West) of the U.S. On the fourth week, production personnel in fertilizer manufacturing and pesticide formulating plants throughout the U.S. are covered in depth. To those not eligible for this controlled distribution, Croplife's subscription rate is $5 for one year ($8 a year outside the U.S.). Single copy price 25¢.

Lawrence A. Long, Editor
Donald Neth, Managing Editor

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March 8-25 — Ohio dealer short courses: Tuscarawas County, New Philadelphia Public Library, March 8; Ohio Power Co. office, New Philadelphia, March 15; Public Library, New Philadelphia, March 22; Coshocton County, Electric Corp. Building, Coshocton, March 9, 16, 23; Licking County, Extension Office, Newark, March 9, 10, 11, 24; Hocking County, Extension Office, Court House, March 11, 18, 25; Muskingum County, First National Bank Auditorium, Zanesville, March 10, 17, 24.

March 16-18 — Annual Chemurgic Conference, Sheraton-Park Hotel, Washington, D.C.

June 13-16—Western Society of Soil Science meeting, University of Oregon, Eugene, Oregon.

June 27-29 — Northwest Section, American Society of Range Management summer meeting, John Day, Oregon.

Sept. 27-29—Annual meeting of National Agricultural Chemicals Assn. for 1960, Hotel del Coronado, Coronado, Cal.

Meeting Memos listed above are being listed in this department this week for the first time.

March 16—Soils Seminar, Soils Buflding, University of Minnesota, St. Paul, Minn.; University of Minnesota and Minnesota Fertilizer Industry Assn. cooperating.

March 22-23—Western Agricultural Chemicals Assn., spring meeting, Miramar Hotel, Santa Barbara, Cal.

March 23-25—North Central Branch, Entomological Society of America, Schroeder Hotel, Milwaukee, Wis.

March 30-31—Twenty-fourth annual meeting, Georgia Entomological Society, New Science Center, University of Georgia, Athens, Ga.

April 11-12—Eighth annual California Fertilizer Assn. Conference, sponsored by CFA Soil Improvement Committee, Fresno State College, Fresno, Cal.

June 12-15—National Plant Food Institute annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 21-22—Eighteenth Annual Convention, Association of Southern Feed & Fertilizer Control Officials, Riverside Hotel, Gatlinburg, Tenn. For further information, write Maurice B. Rowe, secretary-treasurer, Department of Agriculture, 1119 State Office Building, Richmond 19, Va.

June 27-29—Pacific Branch, Entomological Society of America, Davenport Hotel, Spokane, Wash.

July 13-15—Eleventh Annual Fertilizer Conference of the Pacific Northwest, Hotel Utah, Salt Lake City; B. R. Bertramsen, State College of Washington, Pullman, Wash., chairman.

July 27-29—Great Plains Agricultural Council, 1960 meeting, Laramie, Wyo.

July 27-30—Southwest Fertilizer Conference and Grade Hearing, Galvez Hotel, Galveston, Texas.

Aug. 15-23 — Seventh International Soil Science Congress, University of Wisconsin, Madison, Wis., Prof. Emil Truog, Congress Manager, Soils Building, College of Agriculture, Madison 6, Wis.

Aug. 25-27—Mississippi Soil Fertility and Plant Food Council, 1960 meeting, Buena Vista Hotel, Biloxi, Miss.

Sept. 29-30—Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

Oct. 5-6—Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 17-21—48th annual National Safety Congress, Fertilizer Section, LaSalle Hotel, Chicago.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

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Trade Winds From California

FRESNO, CAL.—A new retail nursery store has been opened under the name of Ge-No's Nursery, by Geno A. Nonini, at 2662 N. Dickensen Ave., in Fresno.

●

CLAYTON, CAL.—The Clayton Farm and Garden Supply Co. has been opened by Robert B. Matheson on Marsh Creek Road, east of Clayton.

●

SAN JOSE, CAL.—Ted's Garden Supply is now retailing chemicals and other garden products at 1415 Douglas St., San Jose. Theodore G. Parker, Jr., is owner.

●

WATSONVILLE, CAL. — The B and B Fertilizer Co., formerly owned by Bert Tuana, who died recently, has been sold by his widow. New owner of the company at 30 Brooklyn Ave., Watsonville, is Willard Barnhart.

●

SUSANVILLE, CAL. — The Guarankill Co., a pest control firm in Susanville, has been sold to the Delk Pest Control Co., Inc.

●

BAKERSFIELD, CAL.—Joseph Ducato has opened a new garden and farm supply store under his own name at 1739 Camino Primavera in Bakersfield.

●

CUPERTINO, CAL.—The Hi-Sierra Nursery is the name of a new store operated by I and M Farms, Inc., at 10205 Miller Ave., Cupertino.

●

COLUSA, CAL.—The Maxwell Fertilizer Co. has been incorporated in Colusa by Russell E. Waterbury. Address of the new corporation is 130 Fifth St.

●

CARMEL VALLEY, CAL.—A new garden supply shop has been opened by Salih Mendy in the Airway Ranch subdivision of Carmel Valley.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $11 per column inch.

All Want Ads cash with order.

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ASSISTANT SALES MANAGER—MIDWEST multiple plant operation has opening for aggressive person who desires to use knowledge and skill for advancement. Complete resume, age, experience and availability first letter. Address Ad No. 5716, Croplife, Minneapolis 40, Minn.

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EXCELLENT OPPORTUNITIES FOR dealers, distributors, to sell nationally advertised Campbell's Gro-Green liquid and 100% soluble crystal fertilizer concentrates. Thousands satisfied users. Established sales program. Backed by highly rated firm. Campbell Co. (Est. 1923), Rochelle 49, Ill.

START FUNGUS STUDY

LARAMIE, WYO. — University of Wyoming agricultural experiment station researchers are starting a study to see how much common fungus diseases are costing Wyoming alfalfa growers, according to Ed Andrews, UW plant disease scientist. Fungus diseases—as common to alfalfa as the head cold is to man—hit all permanent alfalfa stands in the state, Mr. Andrews says. Leaf spot, black stem, and downy mildew—all fungus diseases—attack every alfalfa variety, damaging foliage and indirectly lowering seed production.

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Commercial Solvents Corp. .....

Davison Chemical Co. .....
Deere, John, & Co. .....
Dempster Mill Mfg. .....
Diamond Alkali Co. .....
Dorsey Trailer .....
E. I. du Pont de Nemours & Co., Inc. .....
Duval Sulphur & Potash Co. .....

Eastern States Petroleum & Chem. Corp. ... 20

Fipps, Inc. .....

Gaddis Bros. Mfg. Co. .....
Gandy Co. .....
Grace Chemical Co. .....
Grand River Chemical Div. of Deere & Co.

Hahn, Inc. .....
Harshaw Chemical Co. .....
Hercules Powder Co. 24
Highway Equipment Co. .....
Hough, Frank G., Co. .....

International Minerals & Chemical Corp. .....
Iowa State Fertilizer Institute .....

Kent, Percy, Bag Co. 17
Kraft Bag Corp. .....

Mackwin Co., The .....
Meredith Publishing Co. .....
Meyer, Wilson & Geo., & Co. .....
Mid-South Chemical Corp. .....
Mid-States Machinery Co. .....
Miller Chem. & Fert. Corp. .....
Miller Publishing Co. 15
Molded Fiber Glass Body Co. .....
Monsanto Chemical Co. 4, 5

Naugatuck Chemical Div., U.S. Rubber Co.
Niagara Chemical Division .....
Northwest Nitro-Chemicals, Ltd. .....

Olin Mathieson Chemical Corp. .....

Penick, S. B., & Co. .....
Pennsalt of Washington Division, Pennsalt Chemicals Corp. .....
Phillips Chemical Co., a subsidiary of Phillips Petroleum Co. .....
Potash Company of America .....
Power Curve Conveyor .....
Progressive Farmer .....

Reasor-Hill Corp. 23
Riverdale Chemical Co. .....

Sackett, A. J., & Sons .....
Simonsen Mfg. Co. .....
Sinclair Chemicals, Inc. .....
Smith-Douglass Co., Inc. .....
Smith-Rowland Co., Inc. .....
Sohio Chemical Co. .....
Southern Nitrogen Co. .....
Southwest Potash Corp. .....
Spencer Chemical Co. .....
Spraying Systems Co. .....
Standard Oil Co. .....
Stauffer Chemical .....
Successful Farming .....
Swift & Co. .....

Tennessee Corp. 19
Texas Gulf Sulphur Co. 7

Union Bag-Camp Paper Corp. .....
U. S. Borax & Chem. Corp. .....
U.S. Phosphoric Products Division .....
U.S. Potash Co. .....
U.S. Rubber Co., Naugatuck Chemical Div.

Velsicol Chemical .....

Wendnagel & Co. .....
Wilco Chemical Co. .....

(Discussing promising new insecticide compounds at Hercules' Agricultural Chemicals Laboratory are: George Buntin, discoverer of toxaphene; Dr. E. N. Woodbury, laboratory supervisor; Dr. Keith D. Ihde, research entomologist; Dr. Arthur D. Lohr, supervisor, Naval Stores research; and Dr. William R. Diveley, a discoverer of Delnav.)

Hercules Research:

KEY TO TOXAPHENE'S OUTSTANDING RECORD OF SERVICE

Toxaphene has had a remarkable history. In a fast-moving industry this versatile insecticide maintains its leadership after more than 12 years of service to agriculture. New uses are being found for toxaphene each year as it continues its dynamic growth.

Continuous research is carried on by Hercules Powder Company to find new chemicals for agriculture, and to find better ways to utilize the tools now available. Many of the people doing this work were engaged in the original development of toxaphene. Besides laboratory research, Hercules has placed great emphasis upon field testing and large-scale demonstrations. From such applied research in cotton insect control, for example, has come information to help farmers get better yields while lowering their production costs.

TOXAPHENE

Agricultural Chemicals Division, Naval Stores Department
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Wilmington, Delaware

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